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REGIONAL FACTORS IN SITING AND PLANNING ENERGY FACILITIES IN THE ELEVEN WESTERN STATES

A REPORT TO THE WESTERN INTERSTATE NUCLEAR BOARD

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REGIONAL FACTORS IN SITING AND PLANNING ENERGY FACILITIES IN THE ELEVEN WESTERN STATES

A REPORT TO THE WESTERN INTERSTATE NUCLEAR BOARD

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November 1976

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Preface

On June 21, 1976, Professor Norman I. Wengert and Professor Robert M. Lawrence, Department of Political Science, Colorado State University, entered into an agreement with the Western Interstate Nuclear Board to serve as independent contractors for the purpose of conducting a study titled, "Regional Factors in Siting and Planning Energy Facilities in the Eleven Western States--A Report to the Western Interstate Nuclear Board." This study is intended to be incorporated into a larger study being done by the Western Interstate Nuclear Board for the U.S. Nuclear Regulatory Commission, pursuant to Contract AT (49-24)-249, titled, "Multi-State Regional Issues and Intergovernmental Mechanisms to Facilitate Decision-Making Concerning the Planning and Siting of Electric Energy Facilities in the Western United States."

Professors Wengert and Lawrence wish to acknowledge the research and writing contributions of Ms. Louise Buck,a graduate student in Regional Resource Planning, and Mr. Michael Hamilton, a graduate student in Political Science at Colorado State University. Their specific participation is indicated in the chapters they developed, or helped to develop.

The authors also wish to express appreciation to those listed in Appendix A who gave generously of their time.

The responsibility for the content of the report is of course that of the authors. The views expressed herein should not be attributed to the Western Interstate Nuclear Board or to any of those who assisted the authors in the preparation of the report.

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Chapter I. REGIONAL ASPECTS OF ENERGY FACILITY SITING--AN OVERVIEW AND SUMMARY

Power plant siting has drawn increased public concern in the past ten to fifteen years. In some cases, that concern has resulted in explicit state statutes directing, supervising, or controlling siting decisions. While a number of Public Utility Commissions have been able to use traditional concepts of "public convenience and necessity" as the basis for examining siting questions, some states began to consider a variety of separate and explicit siting bills in the late 1960's and early 1970's and a number enacted some of these proposals.

In a review of state control of power plant siting published in 1972, the Southern Interstate Nuclear Board (SINB) reported that "only about five states had officialy enacted siting laws." A revised version of the SINB report released in September 1974 stated "as of September, 1974, eighteen states have passed such legislation and a significant number of jurisdictions will act during 1975 legislative sessions." This, in fact, did occur.

In the eleven Western States, members of the Western Interstate Nuclear Board (WINB), only Colorado, Idaho, and Utah have not adopted specific laws on siting. In several states siting bills had been introduced in 1975 but were not enacted. Such proposals may again be introduced in 1977 legislative sessions. In addition, several of the eleven states have been reviewing their siting policies and practices. But whether action will be taken is uncertain, since the recent

November election may be interpreted as reflecting public hostility to any substantial changes in siting law.

Other factors explaining the interest in state siting legislation are pressures from public and investor-owned utilities to streamline previous siting procedures which required a multiple number of permits and associated administrative activities, and in some states the fear that if the states did not legislate siting procedures, the federal government might consider preempting state responsibility in this matter. Bills have, in fact, been introduced in the last several Congresses expanding the authority of the Federal Power Commission, and the energy crisis has intensified federal interest in siting and related topics.

To a large extent, this interest in power plant siting reflects a special aspect of the generally increased concern over adverse environmental impacts and land use development patterns. Thus even without additional legislation, present air and water pollution laws and regulations, monitored by the federal Environmental Protection Agency, the Clean Air Act of 1970, and the Water Pollution Control Act Amendments of 1972, provide a substantial basis for state regulation of siting. Where public domain lands are involved (e.g., transmission line rights-of-way, or mining), provisions of the National Environmental Policy Act (NEPA) apply as do the provisions of the recently enacted Bureau of Land Management Organic Act and a number of other federal and state statutes. Thus government involvement in energy facility siting is well established. The major difference in the process when specific siting controls have been established (see Chapter II, infra) is the explicit emphasis on such factors as power demand and supply analyses, facility siting alternatives, short- and long-range planning, impact determination and mitigation, governmental coordination (the "one-stop" idea), and citizen participation.

Unquestionably, however, this concern at both state and federal levels has been intensified with respect to energy facility siting decisions for several other reasons. First, a number of proposed plants were to be nuclear and articulate citizen groups expressed fears about nuclear power plant hazards urging government restraint with respect to nuclear energy. The failure of nuclear initiatives in the recent election may be construed as dampening this pressure for more state control. Second, the 1973 oil embargo focused increased attention on energy in general and electric energy in particular. The proposed expansion of coal generation (Project Independence) together with discussions of even larger generating facilities, increased the concern about strip mining, water pollution (especially thermal), air pollution, and about the ugliness of transmission lines. In coastal states a new awareness developed with respect to the potentially adverse effects of coal* and oil fired as well as of nuclear plants proposed for location in the coastal zone. Environmental threats to the coastal zone from oil docks for super tankers and from oil storage facilities and refineries, all of which are of substantial importance to electric power generation, have also been voiced.

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*As of 1976, no coal-fired plants were operating in California, although the possibility of developing such plants is under consideration by the California Department of Water Resources.

But significantly these new and politically powerful concerns tend to focus on individual plants, on particular facilities, on specific sites in the context of the political system of particular states. That the development of power plants, transmission lines, and related facilities (ports, rail lines, slurry lines, water supplies, etc.) might have impacts and consequences reaching beyond the particular plant, power company system, or state was seldom recognized by pressure groups or policy makers. The attention directed to power plant siting was usually site-specific and occasionally company specific. Where one company dominated generation or distribution in a single state, the concern has sometimes been statewide in nature. But seldom either in law or in practice has much attention been directed to interstate or regional dimensions of energy facility siting. The companies themselves are, of course, aware of how they relate to other companies, power pools, and the larger Western Systems Coordinating Council reliability system (see Chapter II, *infra*), and a few state reports and administrative documents identify regional factors. But the generalization is nevertheless accurate that regional factors are given little weight in actual government decisions, and few institutional or procedural arrangements exist for systematic consideration of regional dimensions of electric facility siting.

A growing concern is being expressed in raw material (coal, oil, oil shale, natural gas, uranium, and water) exporting states, primarily the Rocky Mountain States, over resource exploitation and its consequences, and over the issues of energy production for export to out-of-state markets. But these concerns are parochial since small attention is paid to regional interdependence, and to the fact that, paraphasing the U.S. Supreme Court, we are after all one nation.

What are the Regional Factors?

Almost one hundred years ago when central station power generation first became feasible, service areas were neighborhoods and local communities. But as generating and transmission technology advanced, service areas expanded, generating stations multiplied. Then generation, transmission, and distribution was organized as a network or system for reasons of economy, efficiency, and service reliability. Since electric energy could not be stored (except in pumped storage reservoirs and indirectly in ordinary reservoirs as a part of hydro generation), capacity, capability, and reliability were direct functions of generating installations as related to transmission and distribution lines. Technological improvements in the almost 100 years of the electric power industry have been related to one or the other of these three components: generation, transmission, and distribution.

It would be inappropriate to detail the technological history of electric power generation, transmission, and distribution, but it is important to note, that particularly with respect to generation and transmission, the dominant technological thrust has been towards larger and larger generating units and transmission facilities able to carry larger loads greater distances. One result of these developments was that potential service areas could be substantially expanded. Another result of service area attenuation was the increasing importance of service reliability and the necessity to design systems to minimize power losses and outages. Two approaches emerged as crucial to system operation. One was distribution of generating capacity in such a way as to balance inputs into the transmission system and to provide reserve capacity against generating failures or shutdowns and transmission breakdowns. The other was development of intertie agreements generally with adjacent power systems--ultimately designated power pools. The importance of interties was recognized in amendments to the Federal Power Commission Act in the 1930's when section 202 (b) was added giving FPC authority to order interconnections--a strategy which became particularly important in making most effective use of power facilities in World War II.

The record is clear--interconnections, interties, or power pools, however designated, may increase the reliabilitiy of any one system, may permit reduction of reserve capacity requirements, and may generally reduce total generating costs for some, if not all, members of the pool depending on the specific terms of the interchange agreements and the manner in which the interconnected system is operated.

The Northeastern Blackout and a New Stress on Reliability.

Although the Federal Power Commission had authority to order interconnections, this authority was utilized primarily to improve the situation of small municipally owned and small cooperative systems. Interconnections and power pool arrangements affecting larger investor-owned and public (e.g., TVA) power systems resulted largely from these systems negotiating intertie agreements seeking mutual advantages. Thus by 1965 most of the bulk power generating systems East of the Mississippi were interconnected in one way or another. And then in November 1965 as a result of circumstances still not fully understood, a failure in one system triggered a cascading effect which left most of Northeastern United States and part of Canada blacked out for from several hours to eighteen hours.

Clearly such a catastrophe was only possible because of interconnections among the many power systems involved. So it is understandable that public reactions included a questioning of the desirability of power pooling arrangements. Investigations and research by power engineers, however, suggested that power pooling was not at fault but rather that the technical and organizational arrangements within the interconnected system for dealing with crises within the system needed improvement. In fact, after review of the catastrophe, the Federal Power Commission, stressing the importance of reliability, issued orders which encouraged formation of regional and national reliability councils to provide for more effective coordination among power pool participants.

In the western states the Western Systems Coordinating Council (discussed more fully in Chapter IV, infra), presently involving 46 utilities serving all or parts of 14 states and one Canadian Province, became the Reliability Council for this region.

The Regional Impact of Generating Plant Capacity

Only in recent decades has it been technically feasible to build generating plants of 1000 to 5000 megawatt capacity. Increasingly in power engineering literature power parks of 10,000 or even 20,000 megawatts are being discussed. Generating facilities of this size will create major problems of system planning and operation and would require extensive transmission facilities to serve very large geographic areas, as well as collaboration among several companies in financing such developments. A new plant of 1000 megawatts (not to mention 5,000 megawatts) when added to an existing system may generate more power than the total used in some of the less populated western states! The Wheatland power plant, discussed in Chapter II, will use as much energy in one year to control air pollution as is presently consumed in one year by Cheyenne, Wyoming's largest city!

It is assumed that economies of scale justify increasingly larger plants and may justify proposed 10,000-20,000 megawatt energy parks. At the same time, it is obvious that facilities of such tremendous capacity can only be considered in relation to larger and larger service areas--service regions which may often cut across several states. And since these multi-megawatt facilities would become part of the WSCC system, their role and their operation must be assessed in regional terms as well as in subregional terms. Total generating capacity in the eleven state region is presently about 90,000 megawatts.

The Regional Perspective

How power plant and other energy facility siting is regarded depends on the point of view and perspective from which it is approached. The plant design engineer as well as the local planning and land use control agency focus on the single plant or the single transmission line. The state and federal environmental protection policies tend similarly to be concerned with the specific facility and its impact on the more-or-less immediate environment. While environmental impact statements permit a broader focus and sometimes consider complex interrelationships of a proposed facility to a larger system, they generally concentrate on the specific addition. Water and air pollution agencies are equally concerned with the particular and not with the general system.

Public utility commission review of new facilities, while concerned with "public convenience and necessity" have not generally defined this criterion to include siting factors unless specifically required to do so by statutory amendments. In some states regulatory statutes could be construed to permit greater attention to regional system factors, but the commissions have seemed reluctant to move in this direction. These commissions are primarily concerned with the economic effects of a new facility, and given the quasi-judicial character of their decisions they rely primarily on data presented by the utilities applying for certificates, and take little initiative to introduce staff studies or other data dealing with public interests in regional factors.

The newer siting agencies and specifically the California Energy Conservation and Development Commission (see Chapter II, infra) take many other factors into account, but even these agencies appear to be primarily concerned with local or intrastate problems and give little or no attention to the larger region to which most proposed generating facilities and many new transmission lines are connected (see Chapter IV, infra).

Our review of documents and files has left us puzzled as to why the regional system has received so little attention in the data used by state governments in considering energy facility siting decisions. And more importantly it is not clear why siting decisions do not give more emphasis to regional system interrelationships. This subject is explored more fully and some explanations suggested in Chapter IV, infra. One explanation is the relative newness of the interconnected system as now in operation (only about ten years). Another is that stress has been on the technology of interconnection and on reliability, and not on public policy concerns implicit in proposals for siting control.

The literature is unequivocal: power pooling and the complex intertied system of the Western Systems Coordinating Council, involving four subregional power pools and 46 utilities serving 14 states and one Canadian Province, increases reliability and perhaps economic efficiency of the participating systems. Both factors should be of concern to utility commissions, siting agencies, and environmental protection agencies. But little attention has yet been paid to how the WSCC system improves reliability and increases economic efficiency. In some cases system interconnections may reduce needs for reserve capacity, and may permit postponement of plant additions. More importantly, as the size of new plants increases to capture economies of scale more fully, interutility collaboration becomes desirable and location of plant additions becomes important to the operation of the WSCC system as well as to the system of the particular utility building the new facility.

In its most recent Annual Report WSCC indicated that the region had installed capacity of over 90,000 megawatts. In discussions of the so-called "donut"-- the popular term applied to the WSCC system--it has also been pointed out that the system has problems of balance since the greatest demand as well as the largest inputs to the system are on the western side (California), reflecting the unique characteristics of population distribution and density clusters in the 14 state region. It appears, for example, that addition of 5200 megawatts in the proposed San Joaquin Plant in California could have a significant impact on the operation of the "donut," i.e., the WSCC system. Thus the discussion of interrelationships within the system in the five volume impact statement prepared by the Los Angeles Department of Water and Power is of interest,

> "6.1.2.1 NONNUCLEAR CONVENTIONAL ENERGY SOURCES
>
> Nonnuclear conventional energy sources which were evaluated as alternatives to the SJNP /̄ San Joaquin Nuclear Project_7 include the following:

> a. Purchase of capacity and energy.
>
> . . . .
>
> None of these energy sources, either singularly or in combination would serve as feasible alternatives to the SJNP."

The impact statement then considers purchases from outside of California and assesses the future of power purchases from the Pacific Northwest concluding that these sources are either committed or are not reliable for the long-term firm power needs of the participating utilities. In an earlier section of the statement (1.1.2.2.1 RESERVE MARGIN) in discussing system reliability reference is made both to hydroelectric power and purchased power. But somewhat curiously no consideration is given to the WSCC system and the relationship of SJNP to that system or of that system to SJNP. Two rather interesting statements (almost denying the importance of WSCC operations) are made in the statement (2.1.2.1.1):

> "The direct purchase of energy from non-neighboring regions is not practical because of the increased power losses in the long distance power transmission lines, the limited existing transmission line capacity and transmission facilities, and the increased vulnerability to outage over the long distance transmission lines.
>
> "At present, there are no known utilities in the western United States from which the Participants could expect to purchase directly large quantities of intermediate or base-load energy of the same magnitude as SJNP . . . ."

Plants proposed or under construction on the eastern side of the WSCC "donut" (e.g., Wheatland or MBPP, the Yampa Project, the Nunn Plant, the Pawnee Plant) would seem to have significance for the operation of the WSCC system. But as discussed in Chapter IV (infra), there is no centralized planning by WSCC, its emphasis being on reliability and exchange of information. Hence the fact that the relationships of new generating facilities and transmission lines is barely discussed is not surprising. At the same time it seems apparent that the thousands of miles of high voltage interconnecting transmission lines involve substantial expenditures by participating utilities. And one would think that somehow, somewhere the value of these expenditures should be discussed relative to siting as well as rate making decisions.

Few factors in the electric energy situation in the eleven western states are limited to the boundaries of any one state. In many cases, for example, basic energy resources (coal, oil, gas, uranium) come from states other than the one in which the resource is used. Since water plays such a critical role in electric generation, its regional character in these eleven western states almost inevitably involves interests of states other than the one in which the energy is generated. While regional relationships with respect to water are most obvious where hydro plants are involved, they also may involve thermal plants because of the importance of water in the cooling process. Moreover these relationships are often complicated by the dominance of state water law in the control of this essential element. The parochial character of Western water law is mitigated to a degree by interstate compacts which allocate water among states in particular river basins, but use of a state's allocation is governed by its own laws and may restrict development of energy facilities.

An important factor, reflecting the interstate character of energy, is the elaborate structure of committees and commissions--interstate, federal, and state-federal--that deal with facets of the water situation. These collaborative bodies, or new ones created in their image, have been dealing with facets of western energy problems. A thorough study of these organizations should be undertaken to determine their responsibilities with respect to energy and energy facility siting.

Other regional factors of considerable importance include: financing of electric power facilities which often requires financial resources from states other than the one where the power is generated; engineering design and construction of power plants and related facilities, which may involve engineering firms as well as equipment and materials suppliers in other states and staffing and employment of non-residents both during construction and for operation of particular plants.

The Western Systems Coordinating Council

As suggested previously, however, the potentially most significant regional factor in the siting and planning of electric energy facilities is the fact that the eleven western states are part of the elaborate WSCC system of interties and interconnections. And yet there seems to be only slight awareness of this complex and sophisticated regional system among governmental agencies concerned with siting and utility regulation generally.

An information pamphlet prepared by the Western Systems Coordinating Council suggests the extent and complexity of this grid:

> "Careful planning and continuous coordination provide the foundation for electric reliability in the vast area served by the interconnected systems of WSCC. Since its formation in August 1967, WSCC has helped its members withstand electric

> emergencies. The interconnected system has successfully withstood disturbances up to three times greater than that which caused the disastrous Northeast blackout in November 1965.
>
> "The foresight and leadership of those who formed WSCC have resulted in benefits beyond helping member systems cope with major electric emergencies. Reliability has been enhanced by the development of criteria for day-to-day operating and system designs. And, to help participating systems plan for future electric demand, WSCC publishes an annual summary of its 'Ten Year Coordinated Plan.' This publication compiles and analyzes data covering:
>
> .Projected future load.
> .Fuel resources.
> .New generation and transmission facilities."

The pamphlet points out that WSCC covers nearly 1.6 million square miles, more than one-half of the contiguous land area of the United States. WSCC member systems provide electric service for approximately 38 million persons through 71,538 circuit miles of transmission facilities. WSCC region is made up of four natural subregions, designated as general load areas. They are: Northwest Power Pool, Rocky Mountain Power Area, New Mexico Power Pool, and Pacific Southwest Power Area.

This interconnected system, of course, did not always exist. As indicated above, WSCC was established in 1967. In this region, individual power plants were built initially to serve local markets with independent transmission and distribution lines transmitting power to local consumers. As power needs grew, and as generating and transmission technology developed, production facilities increased in size and variety, and individual companies began to plan production and distribution with generating facilities located around their own systems, tied together by high voltage transmission lines. A major operating objective thus required balancing output with demand, utilizing the most efficient combination of production facilities to meet load requirements. From this approach in the management of single company systems, it was but a small step to developing agreements with adjoining systems so that a larger area and a greater number of production facilities were involved. Patterns of interconnection continued to expand and ultimately systems serving several states became interconnected. These so-called "power pools" contributed to economic efficiency of the interconnected system as well as to reliability of service. A unique factor encouraging power pooling was the large amount of hydro power developed in the West which when effectively interconnected with thermal power permitted optimized system operations.

Finally, intertie agreements were concluded in the Western region joining four power pool areas or subsystems into what is now the Western Systems Coordinating Council area.

Thus from an operating or engineering standpoint, at the present time in this area, it may be misleading to talk about a single power production facility (generating plant) without reference to its relationship to the company system, the subregional power pool, and the larger regional system. In short, as these complex interrelationships evolved, based on an elaborate structure of agreements, problems of siting shifted from a simple determination by each utility where a new generating plant or transmission line fitted in best with its own operations, to a need also to consider the regional system.

At the same time, state approvals have continued to stress traditional concepts of "convenience and necessity" giving little weight to the impact of contracts between adjoining power systems, and paying even less attention to complex arrangements in which power production facilities are interrelated in the WSCC area.

The operation of this regional system becomes even more significant as the capacity of new generating facilities increased to 1000 or more Mw. A generating facility such as Wheatland now being constructed north of Cheyenne, Wyoming, which has an initial planned capacity of 1500 Mw should be considered in terms of its regional service area and the pooling of financial resources of the sponsoring members within the service region. That plant, like any major addition to the production facilities in the WSCC region, needs also to be assessed in terms of how it may affect the operations of the WSCC system. The proposed San Joaquin plant, previously discussed, will impact the service area of the participants, the Pacific Southwest Power Area, and also the larger WSCC system.

It is important to note that the pooling arrangements which preceded the WSCC system as well as WSCC itself were based almost entirely on private contractual relationships between the several participating utilities and were governed by principles of private contract law. But today there is being interposed on this system of private contracts, operating arrangements and policies, governmental (local, state and federal) controls ranging from broader examination of the public interest by utility commissions and the Federal Power Commission, to environmental and other specific siting controls. Traditional public utility commission concern for public convenience and necessity, of course, ante-dates the development of the WSCC system by many years. But it seems generally true that most public utility commissions have, until very recently, only been vaguely concerned with system interrelationships, focusing instead on individual generating facilities, transmission lines, and the economic problems of single companies. Even the newer siting agencies seem in most instances to take a parochial viewpoint, limiting their attention to what directly impacts their own states.

The Interface Between Regional Institutions and the States.

Few institutional arrangements exist, and no provisions are made for presenting regional impacts to the state decision makers. A joint study, being undertaken by Oregon and Washington, may be a harbinger of greater consideration of regional interrelationships. The parochial tone of relevant statutes, whether the traditional public utilities commission statutes or newer environmental or siting statues, all carry overtones of state separatism. Yet as an operating fact, energy is constantly flowing between and among states, the effectiveness of the system in part being a result of the location of major input sources, and the WSCC system being a major factor in maintaining system reliability.

Although the utility applying for a permit may introduce into the record some information about the way in which the proposed facility relates to the larger system, no provision is made (based on this reconnaissance) for testimony from individuals, companies, or other interests in states making up the grid. No instance has been uncovered where these regional interests have been systematically presented by other than the applying utility. And state agency staffs tend to be equally parochial. Where WSCC representatives have testified at state or federal levels, it would appear that their testimony has been directed primarily to the negative effects of proposed statutes or policies, and not to the subject of how the effectiveness of the system may be improved.

There is little evidence to suggest that the so-called "dispatchers" who control the day-to-day interchanges of blocs of energy consider "public interest" guidelines to govern their decisions. It would appear that the primary standard for buying or selling blocs of energy to producers who are members of the system is one of comparative costs.

In the short run, this may be an adequate criterion, but if one looks to the effective and efficient development of the system or gives credence to the charge that energy facilities are overdeveloped, then exchange relationships based simply on short-term economic advantage would appear to be inadequate. In short, one can argue that load forecasting should be in regional terms, but institutions for dealing with this question regionally do not yet exist, and state laws and procedures hardly deal with the subject.

It is clear that to deal with regional load forecasts, sound demand and supply data and reliable methods are necessary. It is not surprising, therefore, that strong voices are urging federal preemptive action.

There seems little question that federal preemption in the field of power plant planning and siting poses no constitutional questions. Thus, those concerned with this issue of the federal role need to determine whether the problems of the region can best be dealt with regionally or at the national level. It is clear that the issues being raised today are public policy issues requiring government action for their resolution, and if the states will not deal with these issues, it seems probable that the federal government may be ready to move in. Parochial decisions, separatism, and fragmentation will probably not be tolerated for long. If the states cannot act together, federal preemption would seem to be inevitable.

In many states, of more far reaching consequence for energy facility siting and development than the traditional utility commission regulations have been environmental protection concerns dealing with air pollution control, water pollution control, coastal zone and other land use planning regulations. These have raised new types of public interest issues and required new kinds of data and information from the utilities. (See *infra*, Chapters II and III.)

A concern in newer siting laws has often been alleged "over-development" of energy production facilities with the concomitant recommendation that conservation in electric energy use could provide the means for meeting substantial portions of growth needs. In part, this orientation reflects a no-growth philosophy associated with certain segments of the environmental movement, and in part, it is a response to the Arab oil embargo of 1973 which induced the suggestion of using (and wasting) less energy. A most dramatic instance of this point of view is found in the report of the California Coastal Commission suggesting that perhaps as much as 40% of new power needs in California from now until the year 2000 might be met through conservation, rather than through the production of additional power. Such policy attitudes, of course, have far reaching effects upon siting decisions, and may create dilemmas for the utilities since they remain generally responsible for anticipating all reasonable demands.

Also significantly affecting siting are the systems of water law in the western states based on "appropriation doctrines." Since in many streams, the total quantity of available water is already allocated, plans for new power plants must include steps to secure water rights. Each western state has an agency responsible for administration of water rights, but policies and rules vary considerably.

Another factor that influences siting in most western states arises from the substantial acreages under federal ownership. This affects both the basic energy resources, (coal, oil, gas, uranium) as well as transmission and distribution of the generated energy to the consumers since power lines must often traverse public domain and thus become subject to NEPA and other federal laws and policies. Control over transmission line location can be as restrictive as control over generating facility siting.

The Murky Area of Indian/State Jurisdiction.

Considerable ambiguity exists regarding the complex issue of Indian sovereignty vis-a-vis the authority of the states. The matter is important because substantial amounts of coal are found under Indian lands, and electric transmission lines cross Indian lands. The questions thus arise concerning the extent to which state siting legislation pertains to and can be enforced on the Indian reservations in the West.

Some of the parameters of the legal tangle involving state/Indian jurisdication are suggested in research conducted by the Environmental Protection Agency Region IX (California, Nevada, and Arizona) legal staff in regard to the applicability of state pollution control laws to Indian reservations. For example, according to the EPA study it was found that, "Arizona has not the legal power to enforce her pollution control laws on Indians in Indian country, nor has she the power to try Indians for causes of action arising from pollution in Indian country. Apparently, until rebuked by the U.S. Supreme Court, Arizona will continue to claim jurisdiction to which she is not entitled." (Al Rosen, "Applicability of State Pollution Control Laws to Indian Reservations," EPA Region IX, San Francisco, Cal. 1974, p. 1.) The legal ground for the EPA's opinion about Indian sovereignty vis-a-vis Arizona is based upon the fact that the state has never amended the disclaimer in its constitution which provides that, ". . . until the title to all lands within the state held by Indians or Indian tribes . . . shall have been extinguished, the same shall be and remain, subject to the disposition and under the absolute jurisdiction of the Congress of the United States." (Rosen, p. 16.) It should be noted that PL 280 requires that states remove such disclaimers prior to any assumption of jurisdiction in regard to Indian lands (Public Law 280, 18 U.S.C. 1162, section 6).

On the other hand the Attorney General of Arizona expressed the view in 1970 that Arizona did have jurisdiction over Indian lands in regard to enforcement of air pollution control standards. The occasion of the Attorney General's opinion was a request from the Pima (Tucson) County Attorney concerning Indian and state jurisdiction in air pollution enforcement disputes. The Arizona Attorney General cited the Arizona Revised statutes that jurisdiction is expressly assumed ". . . by the state of Arizona with respect to enforcement of laws relating to air pollution control and the state of Arizona and its political subdivisions shall have jurisdiction with respect to criminal offenses and civil causes of action arising from the enforcement of laws relating to air pollution control on all Indian tribal lands, reservations, and allotments . . ." (Arizona Revised Statutes, section 36-1801, cited in state of Arizona Department of Law Opinion No. 70-25 (R-101), October 15, 1970.) In spite of this opinion research recently completed at the University of Arizona contains the observation, "The Arizona air pollution control agency has been reluctant to assert itself on Indian lands, knowing, perhaps, that many tribes are aware of the state's weak legal position and could mount an embarrassing and even successful attack on the state's statutes." (David A. Schaller, "Environmental Protection on Indian Lands: An Administrative Dilemma," unpublished M.A. thesis, Department of Political Science, University of Arizona, 1975, p. 115).

Of course the Arizona situation is not precisely analogous to that of every other state in the WINB region. However, in other states with large land holdings owned by Indian tribes, such as Montana and New Mexico, there is considerable hesitation on the part of state officials to assert state authority over Indian lands. One may speculate that the final resolution of the Indian/state jurisdiction matter must await action by the U.S. Supreme Court and/or the Congress.

Current Siting Legislation

In many states, siting legislation has been justified as a way to simplify the approval process. Even where "one-stop" siting has not been achieved, the new legislation has often been justified as providing a simplified procedure intended to reduce delays and speedup the approval process.

At the same time, it is significant to note that support for siting legislation in a number of states has reflected a concern for more effective environmental protection and delay in approval of new sites seems less important. These values as they affect energy often are related to the belief that power companies and proponents of energy facility expansion have ignored possibilities for energy conservation. The chain of reasoning is that utilities, with an over-supply of production capacity, are led to promote energy use and to keep prices low. As a result, it is argued, nonrenewable resources are wasted. To those who hold this view, the alternative is to restrict production capacity (as well as to adopt measures limiting consumption) in order to use less exhaustible energy resources. Hence delay may become a tactic in environmental protection. The traditional basis for utility commissions to grant certificates of convenience and necessity was to make certain that energy supplies would equal projected demands with substantial reserves to meet unexpected contingencies and to anticipate growth in the demand. In this mode, utility managers prided themselves in being able to meet needs before they developed. Critics of this traditional approach take the position, however, that the result of this policy has been over-capacity and a consequent stress on promotional rates and sales programs. The conflict between these two views is pinpointed in the language of most siting statutes which requires the applicant for a permit to justify an energy facility in terms of "the need for power" and to relate proposals to five, ten or twenty year demand estimates. Also at issue are questions of reserve capacity of a system needed to assure reliability.

Where siting statutes have been touted as providing one-stop approval, (see Chapters II and III *infra*), it would seem that this remains a hope rather than a reality. In every state, various agencies other than the siting agency have approval responsibility, and there is no question that in some states the siting process has served to extend the time within which a proposal moves from conception to approval. Indirectly, the siting statutes often provide a basis for litigation allowing critics of proposals to challenge decisions of the siting agency, thus extending the time involved in project approval.

Most of those engaged in operating electric energy generation, transmission, and distribution facilities stress costs of delay. But it might be noted that these costs month-by-month are not necessarily uniform, delays at the beginning of a project being less costly than those which occur toward the end of its development. There is reason to question cost estimates which include effects of inflation, since this is a cost experienced by the whole economy and savings realized by building early must be offset against the possibility of lower costs due to a recession as well as increased costs from over-capacity.

A time cost to which it is difficult to attach a dollar value concerns the possibility of changes in technology during the period that a plant is going through the approval process. Looking back over the rather substantial technological developments in the past fifteen years, in pollution control for example, one wonders how best to capture benefits of similar developments likely to occur in the next fifteen years. The risks of adopting old technology where approval extends from ten to fifteen years are substantial.

Environmental Values*

Despite the defeat in June of California's nuclear initiative and similar results in November with respect to less severe proposals in Oregon, Washington, Colorado, Arizona, and Montana (and Ohio), environmental interest groups will continue to play a significant role in the siting of energy facilities in the eleven western (WINB) states. The chief reasons for this conclusion, aside from the often deep feelings and dedicated leadership of these groups, lies in the substantial structure of federal and state environmental statutes already on the books and litigation which may provide a ready means for challenging decisions alleged to conflict with one or another of these statutes. It seems relevant, therefore, to consider the constraints on energy facility siting which may result from environmental values.

Conservation is the first principle underlying most environmentalist's energy policy and facility siting goals. Thus it is argued that by building a strong conservation ethic into the nation's energy future, the projected demand for new or additional electric generating facilities can be reduced. Environmentalists have consistently asserted that energy conservation offers the least cost alternative to the current power supply dilemma posed by the relative unattractiveness of other options, i.e., dirty coal, dangerous nuclear, expensive oil and gas. As a result, a fundamental strategy used by environmentalists in their approach to power plant siting is to challenge the necessity of a particular power facility under review.

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*This section of the report was drafted by Ms. Louise Buck, project research assistant.

A concurrent goal of environmentalists is to minimize social and environmental impacts associated with energy development, including power plant siting. Although the several environmental groups have their own specific objectives and concerns with regard to what they may regard as critical elements of the environment, they seek generally to prevent development in "fragile" areas. These usually include areas with competing beneficial uses, areas characterized by or subject to natural hazards, and areas where there appears to be risks to human health. Many environmental protagonists recognize the difficulty, if not impossibility, of excluding all such areas from development while still retaining some suitable sites, thus a secondary goal becomes the minimization of impacts at whatever site is selected. This approach is often phrased in terms of agency or utility accountability, and involves identifying and fairly distributing the secondary as well as the primary costs and benefits associated with a proposed power facility. The effectiveness of siting processes and institutions for ensuring industry accountability and environmental protection vary from state to state, but there seem to be several axioms to which virtually all environmental groups adhere.

Environmentalists favor a move away from the current trend of large scale, centralized energy facilities towards smaller scale units located in close proximity to the energy consumers. Concomitantly, they regard a decentralized siting permit procedure as more desirable than the "one-stop" approach that has been adopted in several states.

The trend towards centralization of power plant siting, environmentalists argue, leads to erroneous conclusions about the true cost of electricity since those consumers who recieve the benefits of less expensive power may often not be required to pay associated social and environmental costs of generating and transmitting the power. In this view negative externalities tend not to be internalized in the overall economic analysis of a power supply plan when energy consumers are not made directly aware of the "true" costs of electricity.

With regard to power plant siting procedures, environmentalists often distinguish between energy facility siting and energy siting "facilitation," by which they mean to imply that siting agencies tend to be biased in favor of energy expansion. They are clearly opposed to the latter and are of opinion that a centralized, "one-stop" approach whereby decision making authority is embodied in a single council or board is conducive to "facilitation." By instituting a sequence of decision making steps within the application review procedure, environmentalists argue that more potential points of intervention become available. Given the importance of legal challenges based on procedural issues the importance of this position is apparent.

Environmentalists generally favor a "coordinated" approach whereby feasibility and impacts are assessed by various agencies each acting in accordance with respective responsibilities. The best compromise between efficiency and responsibility is achieved, in this opinion, through the procedure of assigning responsibility to a "lead agency." Such an agency is then responsible for "routing" the application through the various review authorities on the basis of a specified time schedule, and for maintaining a record and assessment of cumulative impacts. The authority to reject an application would lie with any of the designated decision making entities, as well as with the lead agency itself. This is one of three proposals being considered as a revision of the Wyoming siting statute.

A second axiom held by environmentalists concerning power plant siting stresses long-range energy planning on a state-by-state basis. State planning seems to be favored over interstate or regional planning at the present time for the reason that regional organizations and planning efforts tend to be ineffectual and easily overcome by "politics," the process and substantive inputs often being obscured from public attention. Some concede that regional energy planning and coordination is reasonable and necessary, but only if each state enters into negotiation with other states, each holding a clear view of its own objectives and fully aware of alternatives for meeting future power needs then long-range interstate planning may be regarded as a viable undertaking. Federally sanctioned and enforced interstate planning, as provided for in river basin commissions and water compacts, have been an example of effective long-range regional planning, according to several environmentalists.

In an interview, one environmentalist laid out the following scenario (not unlike the approach being followed in California), as a desirable approach facility siting within the context of long-range planning. (Summary of an interview.)

> State energy plans should be developed which include comprehensive inventories of energy resources including "available" water supplies. A desired energy growth rate should be established and supply alternatives should then be explored and priorities adopted. A utility company seeking to site a power facility should be required to submit its own long-range plan to the application review authority in each state that will be affected by its proposed development. Such a plan would, of course, deal with all direct and indirect environmental impacts. The utility's plan would also have to be confirmed by all affected states before a formal application could be submitted to the state in which the facility was to be located.

A commonly heard complaint of environmentalists relates to the difficulty they have in obtaining information from the utilities regarding their future development plans. Apparently there is some confusion over the definition of the word "plan." Environmentalists tell of situations wherein they acquire information "through the grapevine" concerning a utility's development plan. Upon confronting the utility with the rumored information, and requesting confirmation or details, the utility responds that it has no such plans, even though there may be hard evidence to the contrary. Environmentalists find that the word "plan," as used by utility companies, apparently applies to the status of having a feasibility or siting proposal in progress or even approved. Long-range state energy planning, with mandatory participation by utility companies having intensions of siting a plant within the state, would go a long way towards reducing such ambiguities and would provide adequate time for "proper" evaluation of a proposed facility. The California siting procedure, in addition, requires the applicant utility to include three alternate sites in its initial request. From the utility viewpoint, this approach is not without its difficulties.

The utilities regard tactics used by environmentalists as delay tactics for the purpose of seeking company concessions. Environmentalists admit, however, that the use of delay as a strategy for curtailing power development or for securing impact mitigation measures is inefficient and often ineffective. Except under unusual circumstances where individuals are willing to "donate" their time for long periods, environmental groups are less able to withstand lengthly legal proceedings than are the utilities. And there is no guarantee that the outcome of such proceedings will favor environmentalists' interests.

The need of opponents to particular projects for additional time in which to collect information and prepare testimony for public hearings is often legitimate and it is not normally this type of delay to which utilities object.

It has often been alleged by utility advocates, however, that an underlying rationale for delay in many cases is a bargaining ploy seeking to make life so difficult for utilities that they will be willing to capitulate to environmentalist demands. In an interview one environmentalist who represents a well-established, national environmental organization, stated "I hope to tie them up for so long that they are forced to come to me on their knees, willing to listen to my demands and to meet them all if I will just quit tying them up. Then

I'll tell them that they need to start practicing energy conservation, that they have to conclusively demonstrate need for the plant." How widely held such an obstructionist view may be is difficult to determine, if for no other reason than that few engaged in the political struggle are likely to be so candid.

Delay through extensive hearings or court proceedings often reflects a polarization between or among groups holding an interest in the outcome. As time passes and extensive resources are committed to the proceedings, the stakes become higher (costs of delay may be substantial to the utility) and negotiation becomes less productive. An environmentalist, taking an active role in a siting procedure, when asked his opinion about the effects that such polarization was having on the community and upon the outcome of a proceeding, replied:

> "The polarization here is good. The associated delays increase the cost of power to the consumer and illustrate the social costs involved in going about developing power this way. If the power is made expensive perhaps the companies will cease to place a high value on large, centralized projects and will discontinue advocating past patterns of consumption. I don't really like to see the state polarized like this, for the people's sake, but if it's what it takes then we have to do it."

Although environmentalists often confront the utilities with their demands by becoming party to siting proceedings, many feel that a more effective approach is to assist local citizens threatened by negative impacts from a proposed facility, providing them with organizational skills and relevant information. Citizen groups may then take it upon themselves to intervene in whatever manner is appropriate and perhaps have more influence with public decison makers.

One "successful" example of this procedure occurred in Idaho during the past year. The Idaho Conservation League (ICL), an organized environmental group in that state, served as a clearing house and information center for individuals and groups involved in the "campaign to stop Pioneer." When the question of siting a power plant was put to the voters in three counties within the vicinity of the proposed plan in a referendum, the ICL spent considerable time and resources getting "the word" out to voters. As a probable result, the counties voted overwhelmingly to recommend to the Idaho Public Utility Commission that it deny the Idaho Power Company's application to construct a 1000 Mw coal-fired facility in Southern Idaho.

Environmentalists feel strongly that through the institutionalization of "effective" siting procedures, elements of which have been described, much of the burden for "watchdogging" the utility industry can be taken off their shoulders and the larger public may begin taking more initiative and responsibility for making utilities accountable to the public interest. Environmentalists often point to California's recent energy and siting legislation as a potentially effective procedure in light of their interests, although to some this agency has not lived up to their fullest expectations. (See Jennifer Jennings, "Another Energy Crisis--A Malfunctioning Commission," California Journal, March 1976.)

Sources for Environmental Commentary (pp I-27 and I-35)

Interviews and/or position statements from the following organizations:

Sierra Club, San Francisco and Denver Chapter
Friends of the Earth, Denver Chapter
Environmental Defense Fund, Denver Chapter
Northern Rockies Action Group, Helena, Montana
Northern Plains Resource Council, Billings, Montana
Idaho Conservation League; Boise, Idaho
Powder River Basin Resource Council, Wyoming
Laramie River Conservation Council, Wyoming
Colorado Open Space Council, Denver, Colorado

Chapter II. SITING PRACTICES IN THE ELEVEN WESTERN STATES

In an up-date of a 1972 report, the Southern Interstate Nuclear Board (SINB) published a detailed account of siting laws in all 50 states indicating that as of September 1974 eighteen states had enacted siting laws and predicting that this number would be substantially increased in upcoming 1975 legislative sessions. Among the eleven WINB states all but two have explicit siting statutes or explicitly control siting through their public utility commission. The manner of control varies considerably, as the following state-by-state descriptions indicate.

It is important to note, however, that in all states in addition to siting controls, air and water pollution standards and regulations apply to power plants and other energy facilities. In all of the Western states, moreover, state agencies manage and control water allocations--a not insignificant factor in power plant siting. In the three coastal states, coastal zone regulations affect siting decisions in a variety of ways. Public utility commission requirements, even where not specifically directed to siting, can and do significantly affect utility operations including location of generating plants and transmission lines. Financial plans for new plants as well as rates and charges are usually reviewed by these Commissions and may raise siting issues.

The important differences between traditional controls and new siting policies are: 1) an emphasis on environmental protection in newer siting laws; 2) a concern for conservation of energy and the accompanying questioning of generating capacity increases; 3) an emphasis on supply and demand forecasts and requirements that utilities and/or agencies make projections for as many as 20 years into the future.

At the local level, zoning and related land use controls may influence power plant locational decisions, although some state siting statutes attempt to preempt such local controls. And federal controls are often of crucial importance including those from the Federal Power Commission, those relating to the use of the public domain (BLM), and in the case of nuclear energy those from the Nuclear Regulatory Commission.

It should be noted, moreover, that energy development also may have serious impacts in the Western states resulting from mining of coal, uranium, oil shale, and indirectly copper and other metals. And since mined materials must be transported, state transportation policies can be important. Increasingly, too, states are seeking to deal with expected indirect consequences of development (the "Boom Town" syndrome) as well as with possible consequences flowing from resource depletion with resulting ghost towns. Thus a thorough study of state laws and policies affecting energy would need to review all of the sources referred to above. In the following sections, however, primary attention is on controls directly concerned with siting of energy facilities ignoring such other state regulatory activity as stems from water or air pollution control laws. At the same time, it should be reemphasized that some of these other state controls may delay or deter specific projects and could adversely affect the ability of utilities to meet demands likely to be placed on them. But this must be a future investigation.

A Classification of the Eleven Western States

As the following summaries of state siting laws suggest, the approaches used by the individual states vary considerably. They are therefore classified or grouped as follows:

A. California--the state with the most detailed and far-reaching controls and also facing the largest number of new or additional plant proposals. (Section 1.)

B. Arizona, Washington, Oregon, Montana and Wyoming--states with explicit siting statutes, differing in detail, but with similar objectives and more-or-less analogous procedures. (Sections 2-6.)

C. New Mexico, Nevada, and Idaho--states in which siting regulation has been taken on by the public utilities commissions. (Sections 7-9.)

D. Utah and Colorado--states where siting bills failed of enactment and regulation is highly fragmented. (Sections 10 and 11.)

Section 1. Siting practice in the State of California

The process of energy facility siting in California is probably more fully developed and more complex than in any of the other states in the WINB region. A variety of natural and societal factors contribute to this situation.

First, the size of the state, its population of approximately 20 million, and the concentration of that population around a few key urban centers strongly influence energy facility siting. In addition, the substantial growth of the California economy over the past three or four decades contributes to energy problems and to the complexity of energy siting. The climate (temperature and rainfall patterns) also is important to energy supply and demand and contributes to facility siting problems.

Since California is a very large state in area and in population, it is not surprising that it is served by more than 10 large bulk power generating utilities and many smaller companies. And as a result, coordination of generation, transmission and distribution has been a critical issue in the state for many years. In addition, the Corps of Engineers and the Bureau of Reclamation are major energy producers and wholesalers in the state. Energy is also produced by the California Department of Water Resources, which will by the 1980s require substantial amounts of energy to pump water under the California Water Project.

The Los Angeles Department of Water and Power, Pacific Gas and Electric Company, Southern California Edison Company and California Department of Water Resources together serve approximately 90 percent of the state's electrical needs. The first three listed in the preceding sentence have a generating capability (as of 1976) of over 37,000 megawatts--nearly half of the total capability of the entire Western Systems Coordinating Council membership of 46 utilities serving the eleven WINB states as well as portions of three other states and one Canadian Province. In addition, California in 1975 had approximately 5000 megawatts of power capacity available to it from out-of-state sources. The Pacific Northwest and Hoover Dam provide hydro capacity and thermal plants in Arizona, Nevada, New Mexico and Washington also provide part of California's capacity.

A variety of intertie agreements exist between the several systems serving the state. In addition, they participate in subregional power pools and in the Western Systems Coordinating Council program (see Chapter IV).

As suggested above, climate is an important factor in the operation of energy facilities and in planning the siting of such facilities in the state of California. Climate affects not only patterns of energy use, but also its availability since a substantial part of the energy supply of the state is hydroelectric. The Pacific Gas and Electric Company, for example, produces approximately 40% of its power from hydroelectric dams in the Sierras. In addition, the climatic situation makes irrigation an important water use, indispensable to productive agriculture in many parts of the state. Thus, there is a close relationship between water development and power generation and in some situations competition for the use of water. Energy for water pumping is also significant for some irrigation.

Another factor in the California situation is the acute public awareness of environmental issues and a wide-spread public interest in preventing environmental degradation among large segments of the population. For example, the largest number of Sierra Club members live in California (where the organization was founded by John Muir). A great deal of litigation has been initiated in this state by public interest groups to protect environmental values.

In response to these several forces a variety of programs have been developed which relate to and often constrain the siting and development of energy facilities. Some of these programs are independent state activities; others are intimately related to federal statutes. The State of California has an Environmental Quality Act [Public Resources Code, Section 21000 ff.] modelled on the Federal Act (NEPA) with the significant difference that it applies both to state and local agencies, and to private actions for which a government permit is necessary, including power plants and other energy facilities. Thus, an environmental impact report is mandatory before a government entity (state or local) can act either for itself or in approving private projects. Under the Warren-Alquist Act which established the California Energy Resources Conservation and Development Commission (ERCDC) in 1974, that Commission has been designated the lead agency responsible for preparing impact reports for energy facilities it has approved.

California air pollution control activities, which preceded present federal statutes on the subject, are now substantially supported by provisions of the Federal Air Quality Act of 1970. Administration of air quality control in California is on a regional basis, the regional agencies being responsible for establishment of standards and their enforcement. Water pollution control programs, supported by the Water Pollution Control Act amendments of 1972 (PL 92-500), are also of considerable importance to energy facility siting. For example, thermal pollution is an important problem in the case of thermal plants, and salinity control in the case of certain geothermal energy facilities. In addition, the relationship of energy facilities to return flow irrigation water is important to water pollution management.

Intimately related to problems of water and to energy facility siting is the California Coastal Zone Management Program, created by Coastal Initiative (Proposition 20) in 1972. That law established six regional commissions and one state commission with responsibility for preparing a Coastal Zone Plan to be submitted to the legislature in 1976. In addition, the Coastal Zone Commissions were given interim control authority while the plan was in preparation. The report of the Coastal Zone Commissions was presented to the California Legislature in 1976 and implementing legislation was enacted late in summer. The authority of the Coastal Zone Commissions impinges significantly on energy facility siting within the defined coastal area, approximately 1,000 yards inland from coastal boundaries, including estuary areas. Under the Smith Act, which made the Coastal Zone program permanent, the Commissions continue to be responsible for the development of ports where oil (including Alaska oil) might be unloaded, as well as for oil drilling development in the three mile zone under state jurisdiction. The Commissions also have responsibility for energy facility siting in the coastal zone. The Smith Act directs simply that the

Commissions collaborate with the ERCDC. It seems apparent, therefore, that some very difficult problems of policy and procedural coordination will need to be dealt with to relate the coastal zone decisions to those of the Energy Commission.

The California Water Project, which is to cost almost two billion dollars, involves the development of the state's water resources transferring water from northern California to southern California primarily for agricultural but also for urban uses. At present the California Water Project produces a surplus of electric energy, but ultimately in the 1980's, the Project will require substantial energy for pumping irrigation and urban water. The Department of Water Resources will then become a major consumer of energy and its activities will have a significant effect upon the demand for energy and the siting of energy facilities.

Particularly complicated in all of the western states and by no means uniform among them is the control of water rights. The development of California water law has been complicated by the concurrent existence of riparian and appropriations water rights doctrines. California presently has three principle agencies with duties in the water rights areas: The Department of Water Resources; the State Water Control Board; and the California Water Commission. The Water Resources Control Board exercises adjudicatory and regulatory functions in the field of water resources. The California Water Code authorizes statutory adjudications for all kinds of rights to use water from any stream system. This is not the place to review California Water Law, but it is clear that energy facility siting and development can also be restricted by the administration of state water law.

As in most states, substantial powers have been delegated to local governments for land use planning and control. While state statutes grant certain preemption authority to several of the state agencies involved in energy facility siting, it is clear that politically they dare not ride rough shod over local plans and land use decisions. Careful consideration must be given (for example, in the environmental impact reports) to the effects and consequences of energy facility siting decisions on local planning and zoning.

Finally, feelings run high in California regarding the siting of nuclear facilities. And while the referendum in June 1976 seeking to restrict nuclear facilities failed to pass by approximately a two-to-one ratio, nevertheless, a deep concern over nuclear hazards continues so that litigation challenging siting decisions for nuclear facilities can often be expected. Just before the June referendum the legislature enacted three bills which served to tighten processes for nuclear development decisions in the state. These statutes, together with the Coastal Zone Program might well make more difficult the location of new nuclear facilities in the coastal zone, if not also in other parts of the state.

The Act establishing the California Energy Resource and Conservation Development Commission was passed in May 1974, but the commission did not come into existence until January 1975. Although the legislative history of the Act and the policy statement in the opening sections of the Act suggest that ERCDC was to be a "one-stop" facility siting agency, there is reason to doubt whether this will in fact be the case. The first siting case is presently in process before the commission (as of August 1976) so there has been very little actual experience under the Act. It should be noted that ERCDC is concerned with much more than simply energy facility siting. Included in the policy statement in the initial sections of the Act is a recognition of state responsibility for ensuring a reliable supply of electricity maintained at a level consistent with environmental protection and public health and safety. The policy statement then asserts:

> "It is . . . the policy of the state and the intent of the legislature to employ a range of measures to reduce wasteful, uneconomical, and unnecessary uses of energy, thereby reducing the rate of growth of energy consumption, prudently conserve energy resources, and assure statewide environmental, public safety and land use goals." (California Public Resources Code Section 25007.)

The key chapters of the Act deal with planning and forecasting, with conservation of energy which includes assessment of energy sources and methods of production as well as procedures to reduce wasteful, inefficient, unnecessary and uneconomic uses, and also generating efficiency, with siting, with research and development, and with energy shortage contingency planning.

The legislative history of the Act clearly indicates that it was in part premised on the desire to slow growth in the demand for electricity through conservation measures. The implication is clear that long-range planning may help reduce growth in demand, and that the Commission would thus be warranted in restricting what sponsors of the Act considered over-development of new facilities. Thus, proposals for new generating facilities must show a need for additional power related to five, ten, and twenty year forecasts. The language of the Act evidences no awareness of the WSCC system even though that system has obvious benefits for California energy planning and operations.

A similar stress on "conservation" appears in the report of the Coastal Zone Commissions where it is stated "in the long-term increased prices, intensive conservation efforts, new energy systems, and revised price structures could probably reduce California's estimated demand by as much as 30-40% of the conventional projections for the year 2000." (California Coastal Plan, December 1975, p. 94.) At the same time, while the Coastal Zone Commissions Act and the Warren-Alquist Energy Act, which created the ERCDC, stress conservation of energy and reduced consumption, they do not prevent the agencies they created from dealing with the need for new facilities. Thus the ERCDC (in the summer of 1976) was considering adopting a growth in demand rate of between 3 and 4 percent.

In summary, the Energy Commission has a mandate to:

1) assess trends and to forecast statewide demand for electricity and other forms of energy. It would appear, incidentally, that if the commission forecasts of demand were lower than those of the energy companies, approval for new facilities might be denied, but to this point in time the agency has been working closely with the utilities in developing its forecasts of "the need for power." The Act also provides that:

2) The Commission is to determine the need for new power plants and evaluate and certify proposed designs and sites either on the coast or inland. If the plants are located in the coastal zone, then approval by the Coastal Commission will also be required under the Smith Act.

3) The Commission is to study and promote development of new and alternative energy resources and new generation and transmission techniques.

4) The Commission is to prescribe and carry out new and expanded energy conservation measures, the Act listing a number of these.

5) Finally, the Commission is to report to the governor and legislature every two years, making recommendations with respect to state policies and actions needed for orderly development of energy to meet the needs of the state, the first such report being due in January 1977.

The Act rested on the assumption that energy production facilities had been "over-developed" and that this in turn had resulted in over use of scarce resources. This attitude was evident, for example, in the hearings held by the Commission in the summer of 1976 to determine the desirable reserve capacity in the combined systems of the state. The conclusions drawn from these hearings are not yet available. But it would seem that the Commission will ultimately become involved in assessing the relationship of the WSCC system to the California subsystem. As indicated, however, there is no recognition in the statutes of the fact that several power systems in California are in turn interconnected with the WSCC system nor of how these interrelationships might affect California energy planning.

Illustrative of the disregard of these relationships is an opinion of the attorney general /¯No. SO 75-50_/ holding that electric plants built outside of the state to serve California will have to meet California environmental (air and water pollution) standards and that the responsible agency will have to prepare an environmental impact report on such projects. His opinion, of course, deals with plants supplying firm power in which California utilities may have an ownership share. This kind of extraterritoriality may have much to commend it, but it would seem to ignore the way in which the electric system in fact operates. Rather than evidencing an awareness of the day-to-day movement of power this opinion appears to take a typical parochial view of the way in which power is produced assuming that a particular plant serves only a particular area and load.

The Energy Commission Statute suggests that its purposes include the need to prevent arbitrary delay in siting facilities, yet utility organizations expecting to seek commission approval in the future seem to feel that this objective is not likely to be accomplished. The system established by the Warren-Alquist Act envisions an interactive planning process including the state, the utilities, and the public. Presumably such activities will result in early identification of energy facility sites in relation to five, ten, and twenty year forecasts to be updated every two years. These forecasts are to be prepared by the utilities in accordance with a common methodology developed by ERCDC.

The site certification process is based upon applications from the utilities and involves several major steps:

1) The first stage is the notice of intention (NOI) with respect to filing an application. This is a kind of preliminary application and the utility is required to specify three alternative sites, at least one of which is to be outside of the coastal zone.

2) The second stage is a formal application at least 18 months prior to the planned construction date. This application is to include the exact specifications, design and other details. After agency review, public comments and hearings, the ERCDC may approve the application attaching such conditions as it sees fit consistent with state law. A variant procedure is permitted when there appear to be no prudent or feasible alternatives.

Under the state Environmental Quality Act of 1970 the Energy Commission has the responsibility for preparing the Environmental Impact Report in connection with its issuance of a permit to a utility to build a new generating facility or locating a transmission line. The significance of this requirement is indicated in an opinion of the California Supreme Court where the court stated:

> "These reports compel state and local agencies to consider the possible adverse consequences to the environment of the proposed activity and to record such impact in writing. In an era of commercial and industrial expansion in which the environment has been repeatedly violated by those who are oblivious to the ecological well-being of the society, the significance of this legislative act cannot be understated."

Consistent with this language the environmental impact report might on occasion provide the basis for a public interest group injunction where the Energy Commission has given nominal approval to a power plant site or a transmission line location.

In short, the complex interrelationships among the several California statutes dealing with the environment which impinge upon the energy facility siting process has by no means been fully explored. A pessimistic view of the situation leads to the conclusion that the system can only add time to the approval process. Interviews with utility executives and managers indicated their expectations that construction of major energy facilities in California could take from eight to fifteen years under present procedures. Few felt that the ERCDC process would speed up siting decisions.

Approval Time-tables

Two utilities, Southern California Edison and Pacific Gas and Electric Company provided master lists of approvals and permits for major projects. In each list an estimate was made as to time involved. Space does not permit reproduction of these lists since each runs to about 20 pages. The following excerpts from the Pacific Gas & Electric Co. statement give an impression of the importance of time in the approval process and suggest the complexity of that process. This is not to argue that the time and complexity are not warranted but simply to point out concerns of the utilities on the subject and to suggest the need for reappraisal.

Excerpts from "MASTER LIST OF APPROVALS AND PERMITS FOR MAJOR PROJECTS"

(Provided by PG & E Co.)

Agency/Authorizations and/or Agreements

FEDERAL AGENCIES

1. Nuclear Regulatory Commission
    - A. Limited Work Authorization (Optional)
    - B. Construction Permit
    - C. Operating License
    - D. Special Nuclear Material License
    - E. By-Product License for contaminated equipment
    - F. By-Product - Special Nuclear Material Licenses (all sources except radium 226)

2. Environmental Protection Agency
    - A. National Pollutant Discharge Elimination System (NPDES) Permit
    - B. Approval to Construct
    - C. Spill Prevention Control and Counter Measure Plan
    - D. Parking Management Plan Approval

3. Federal Aviation Administration
    - A. Air Navigation Approval (Height limitations, transmission lines, lighting and marking of stacks)
    - B. Helistop Approval
    - C. Landing Strip Approval

4. U.S. Forest Service--Special Use Permit or Easement

5. Federal Communications Commission--License to Construct and Operate Electronic Transmitting Equipment

6. Bureau of Land Management
    - A. Land Acquisition
    - B. Special Land Use Permits (geology)
    - C. Special Land Use Permits (meteorology)
    - D. Special Material Sale
    - E. Easements

7. Bureau of Indian Affairs--Agreements and Easements

8. National Park Service--Land Use Permit

9. Bureau of Reclamation
    - A. License to use reclamation land
    - B. Joint Use License

10. Bureau of Outdoor Recreation--Land Use Permit

11. Bureau of Mines--Land Use Permit

12. Department of Labor Occupational Safety and Health Administration (OSHA)--Requirements-Adherence.

13. Bureau of Sport Fisheries and Wildlife
    A. Land Use Permit
    B. Administrative review of requirements and procedures having potential impact.

14. National Marine Fisheries Service--Administrative review of requirements and procedures having potential impact

15. Army Corps of Engineers
    A. Permit to Construct in Navigable Waters (Sec. 10)
    B. Permit to Dredge and fill in naviagable waters (FWPCA-Sec. 404)
    C. Easement

16. U.S. Coast Guard
    A. Aids to Navigation Agreement
    B. Permit to Bridge Navigable Waters

17. Department of the Treasurey, Customs Service--Certification of the facility

18. Federal Power Commission--FPC License

19. Advisory Council on Historic Preservation--Protection and Preservation of Historic and Cultural Properties
    A. Detailed Archaeological and Historical Literature and Field Studies
    B. Determination of No Historical Site Impact
    C. Impacted Site Memorandum of Agreement
    D. Compliance with Memorandum of Agreement Mitigation Program

20. Department of the Treasury-Internal Revenue Service-Alcohol, Tobacco and Firearms Division
    A. License (Manufacturer, Importer and/or Dealer)
    B. Permit (User)

21. Federal Energy Administration--Identification Report

22. U.S. Navy
    A. Easement
    B. License for Non-Federal Use of Navy Lands

STATE AGENCIES

1. State Lands Commission--Permits and Easements to Construct on or Utilize State Lands

2. State Department of Public Health
   A. Contaminated Equipment License
   B. Radioactive Material License (radium 226 sources)
   C. Approval to Construct
   D. Radiological Monitoring Program Approval

3. California Division of Oil and Gas (Pipelines Only)

4. California Water Resources Control Board--Certification of Compliance

5. State Department of Transportation
   A. Encroachment Permit
   B. Crossing Permit

6. State Department of Parks and Recreation--Encroachment Permit

7. California Public Utilities Commission--Certificate of Public Convenience and Necessity

8. California Coastal Zone Conservation Commission
   A. Regional Permit to Construct
   B. State Level (Appeal)
   C. State Level (Judicial review)

9. State Department of Water Resources-Division of Safety of Dams Certificate of Dam Approval

10. State Department of Fish and Game
    A. Agreement Regarding Streambed alteration or material removal
    B. Blasting Permit
    C. Easement--Administrative review of requirements and procedures having potential impact

11. State Department of Aeronautics--Aeronautical Site Approval (Heliport)

12. State Department of Industrial Relations - Division of Industrial Safety
    A. Permit to Operate Equipment A-1. Boilers; A-2. Pressure Vessels; and A-3. Elevators
    B. Miscellaneous Industrial Safety Permits
    C. CAL-OSHA Permit
    D. CAL-OSHA Requirements (Adherence, Interpretation of and variances)

13. California Energy Resources Conservation and Development Commission
    1. Notice of Intention
    2. Certification
       A. New Site
       B. Additional Facility

14. State/County Pollution Control Financing--Review

15. State of California Resources Agency--The Reclamation Board Reclamation Board Order

16. State Department of Motor Vehicles--Registration of new vehicles and annual acquisition of license tabs (Project vehicles assigned or owned)

17. Regional Water Quality Control Board
    A. Industrial Waste Discharges Permit (NPDES)
    B. Minor Discharge

18. Regional Air Pollution Control District
    A. Authority to Construct
    B. Permit to Operate

19. San Francisco Bay Conservation and Development Commission
    A. Major Permit
    B. Minor Permit

LOCAL AGENCIES

1. County Flood Control District
   A. Permits for Crossings
   B. Easements for Crossings
   C. Discharge Permit

2. City or County Department of Health--Sanitation District

3. City or County Department of Health--Well Permit (core and exploratory drilling and cathodic protection wells)

4. County Water Pollution Department--Waste Discharge Review

5. City or County Department of Building and Safety
   A. Grading Permit
   B. Miscellaneous Building Permits (foundations, buildings, tanks, etc.)

6. City or County
    - A. Planning Commission
        - 1. Zoning Lookup
        - 2. Preliminary Environmental Assessment Questionnaire
        - 3. Conditional Use Permits, Variances, Zone Changes, etc.
    - B. Board of Supervisors or City Council--Zone changes and appeals from the Planning Commission decisions
    - C. Local Agency Formation Commission
    - D. Court Appeals--Appeals from the Board of Supervisors or City Council decisions

7. City or County Fire Department--Fire protection review and approval

8. City or County Road Department
    - A. Overload Approvals
    - B. Construction Permit
    - C. Excavation Permit
    - D. Bridge Attachment Permit
    - E. Encroachment Permit

9. Board of Harbor (or Port) Commissioners--Review and approval

10. Property Owner and/or Public Agency
    - A. Easement
    - B. Land Acquisition
    - C. Soil Disposal Agreement
    - D. Evaporation Pond--Clay Excavation Agreement
    - E. Lay Down Areas
    - F. Temporary Access

11. Other Utility and Railroad Companies--Authorizations to encroach to their right-of-way
    - A. Railroad 90 degree Cross
    - B. R/W Acquisition & Longitudinal Encroachment
    - C. Other Utilities

12. City or County Agency--Franchise for Pipelines and Transmission Lines within or adjacent to city streets and/or county roads.

ADDENDUM, Chapter II, Section 1

The material which follows is taken from Bay Area Council, Bulletin #6, September-October 1976, pp. 3-4.

FINAL COASTAL BILL PROVIDES FOR A MORE WORKABLE STRUCTURE

Smaller Coastal Zone, Larger Local Role

The Governor has signed into law the coastal protection bill, SB 1277, that replaced and to a large extent incorporated the original California Coastal Commission-backed bill (SB 1579) killed by the Senate Finance Committee in July. Authored by Senator Jerry Smith of Saratoga, SB 1277 is the central element of a coastal legislative package that establishes a permanent state coastal commission and includes measures financing the commission's operations as well as state acquisition of some coastal properties.

Acceptance of the funding measures was the lever used by a loose-knit statewide business-labor coalition to negotiate amendments to the primary bill. As enacted, SB 1277--now entitled "The California Coastal Act" rather than "The California Coastal Conservation Act"--reflects the long process of compromise that has been ongoing since introduction of the original coastal bill by Senator Anthony C. Beilenson last February.

In comparison to earlier versions of both SB 1579 and SB 1277, the bill signed by the Governor comes considerably closer to balancing coastal protection with the broader public interest. The Council has worked since introduction of SB 1579 for a bill that treats the coastal zone comprehensively, and allows for orderly and properly sited development within the coastal area. Throughout the amendment process the Council developed and recommended specific language as well as general policy changes in both the Beilenson and Smith bills. Developed with the assistance of a Council task force, the Council's recommendations are for the most part reflected in the final legislation.

In general, the version signed by the Governor reinforces local autonomy within the coastal zone, curtails the state coastal commission's authority over industrial and housing development, and goes further than previous versions in limiting the geographic area of commission jurisdiction.

The delegation of authority and responsibility for coastal planning and management is less complex than before, and the regulatory policies are less rigid. SB 1277 no longer incorporates the entire Coastal Commission Plan by reference, as did SB 1579, and for that reason many special planning requirements such as watershed planning have been eliminated. Many provisions that before unequivocally required specific actions by the coastal commission, local governments, or developers, have been amended to require action only when feasible.

Major areas of coastal policy that have been substantially modified include:

Geographical Jurisdiction. The state coastal commission will now have authority only within a single zone that includes significant recreational, estuarine and habitat areas, and extends no more than five miles inland. Inland lines drawn to protect agricultural lands were eliminated. The new coastal zone is approximately half the size of the Coastal Resources Management Area (CRMA) originally designated in the coastal plan and SB 1579.

In the Bay Area, the CRMA would have extended inland as much as 16 miles in some areas. As replotted, the coastal zone is now 1½ to 2½ miles wide along the northern Sonoma coast, 4½ miles wide at Russian river, 1 mile at Drake's Bay, no more than 1000 yards wide throughout San Francisco (considerably less in most areas), and widens at Devil's Slide to reach a width of 4 miles at Half Moon Bay. Exact coastal commission maps of the coastal zone will be available by March 1, 1977, from Cartwright Blueprint in Sacramento (telephone 916/443-6838), and inexpensive copies of maps used in final legislative deliberations are now available from the same source.

Local Coastal Programs. A requirement that local coastal programs (LCP's)--intended to be the main implementing mechanism for coastal act policies--include 14 specific components was eliminated from the Beilenson bill, giving local government greater discretion in plan content. In non-sensitive areas, the city or county general plan together with zoning ordinances and maps are the documents to be submitted as the LCP. For designated "sensitive coastal resource areas" (such as marshlands or high-use recreational areas), LCP's will be more detailed, and will include stronger enforcement devices. In either case, the LCP must be certified by the regional or state coastal commission.

Coastal Development Permit Authority. Both developers and local governments sought--and finally won--a provision giving local governments power to grant coastal development permits before as well as after certification of LCP's. In earlier versions of the measure, regional coastal commissions had local permit authority in the interim period between January 1, 1977 and certification of LCP's. Interim local permit granting authority does not extend to certain critical areas or major public works projects, and is conditioned upon adherence to coastal commission guidelines. The bill does direct the commission to exclude urbanized areas from coastal permit requirements if they meet certain density and other criteria.

Life of Regional Commissions. The schedule for phasing out regional coastal commissions was the subject of negotiations all through the amendment process. Regional commissions are responsible for assisting with development of LCP's, as well as certifying them, and will go out of business either when all LCP's in the region have been certified, or by June 30, 1979. They will not commence operation until a "sufficient workload" has accumulated.

Legislative Oversight. The coastal commission's decision to designate certain areas as "sensitive" does not take effect until there is assent by the Legislature. Also, the coastal commission is to report to the Governor bienially on progress made in implementing coastal policies. Procedures are established for the Legislature to consider recommendations for changes in the relationships between existing agencies and the state coastal commission.

Section 2. Siting practice in the State of Arizona

Prior to 1971, the Arizona Corporation Commission (ACC), like Public Utility or Public Service Commissions in most states, was responsible for decisions concerning adequate and reliable supplies of electricity at lowest cost to consumers consistent with a fair rate of return for the utilities. However, other state entities also exercised certain responsibilities regarding energy policy and facility siting. These entities included the Arizona Atomic Energy Commission, the Oil and Gas Conservation Commission, the Arizona Power Authority (primarily concerned with hydroelectric power), and the recently created Arizona State Fuel and Energy Office located within the Office of the Governor.

While it had been suggested that the ACC possessed the necessary regulatory jurisdiction and authority to deal with siting problems,[1] the Commission chose not to exercise such authority. Thus the Power Plant and Transmission Line Siting Act of 1971 directed the Arizona Corporation Commission, the utility regulating agency of the state, to establish a Power Plant and Transmission Line Siting Committee (PP & TLSC).[2]

One impetus for the PP & TLSC was the threat of federal preemption of siting embodied in Congressional legislation pending passage.[3] The proposed federal legislation provided that should states not become involved in the siting evaluation process, the federal government would preempt the responsibility for siting. Upon learning of this threat at a WINB meeting in Portland in December 1970, the Arizona Atomic Energy Commission is reported to have worked with its legislature and with state utilities to produce S. 98--the Power Plant and Transmission Line Siting Act, introduced to the January 1970 legislative session.

While the threat of federal preemption was a cause for the creation of the PP & TLSC, three other factors contributed to the passage of S. 98.[4] One factor was a dispute which erupted in Tucson during the summer months of 1970 regarding plans of the Tucson Gas & Electric Company to construct a twenty-mile transmission line along the Rillito River. As a result of a petition (filed by Tucson residents) requesting a hearing, and the widespread discussion in Tucson about the proposed construction, the ACC in this instance held hearings on transmission line siting. During the hearing, doubts were raised about the jurisdiction of the ACC in such matters. For its part the ACC affirmed that it had jurisdiction to establish standards by which to judge transmission line siting proposals. However, the ACC stated that since it had not established such standards, it would not exercise jurisdiction in the TG&E case nor in any other case until such standards were established. "Thus, the Rillito controversy was instrumental in pointing out the need for encouraging the establishment of an institution which would have the specific legal mandate for investigation of the environmental ramifications of transmission line and power plant siting."[5]

Another factor contributing to the creation of the PP & TLSC was Arizona's reaction to land use and siting activity in other states. Lastly, Arizona utilities were becoming concerned about the necessity of obtaining an increasing number of state and local agency approvals before power plants or transmission lines could be constructed. Thus it was hoped by the utilities that legislation could be passed which would provide a single arena in which the siting problems could be argued out and settled rapidly.

The Power Plant and Transmission Line Siting Act (Arizona Laws, 1971, Ch. 67, I) objectives are: (a) to minimize any adverse effect upon the environment and upon the quality of life of the people of the state which new electric energy facilities might cause; (b) to protect environmental values and take into account the total impact and effect of electric energy facilities on society; (c) to provide procedures which will prevent delays in new construction and prevent increases in costs passed on to Arizonans; and (d) to provide adequate opportunity for individuals, groups interested in conservation and the protection of the environment, local governments, and other public bodies to participate in timely fashion in the decision to locate major facilities at specific sites.

The Power Plant and Transmission Line Siting Act invested the PP & TLSC with responsibility for evaluating competing factors before issuing, or refusing to issue, a "certificate of environmental compatibility" for power plants and transmission lines. The factors which the Committee is to consider, but which are not weighted by the legislature for the Committee, are: (1) existing plans by governments and private entities for other developments near the proposed site; (2) fish, wildlife, plant life, and associated forms of life upon which they are dependent; (3) noise emissions and interference with communication signals; (4) availability of the site to the public for recreational purposes, consistent with safety considerations; (5) existing scenic areas, historic sites and archaeological sites; (6) the total environment of the area; (7) the technical practicability of achieving a proposed objective and the previous experience with equipment and methods available for achieving a proposed objective; (8) the estimated cost of facilities and site as proposed by the applicant and the estimated cost of the facilities and site as perceived by the Committee; (9) any additional factors which require consideration under state and federal laws. In considering these factors the Committee is empowered to preempt local zoning and issue a certificate if (a) the Committee finds as a fact that compliance with local ordinances is unreasonably restrictive, and therefore (b) not feasible in view of available technology.

The PP & TLSC is composed of 18 persons, eleven of whom are state officials, the remaining seven being appointed members. Of those who are appointed, two are public members, two represent incorporated cities and towns, two represent counties, and one is a registered landscape architect. The appointments are made by the ACC. The ACC also establishes the rules and procedures by which the

PP & TLSC operates. The chairman of the PP & TLSC is the attorney general or his representative.

The Committee is required to hold a hearing within approximately two months after the submission of an application. Designated parties to the hearing may give oral testimony and cross-examine witnesses. Designated parties include the applicant, interested state agency representatives, city/county government representatives, envirionmental and other interested groups, and those determined by the Committee as being properly classified as designated parties. A person, not a party, may file a written statement which becomes part of the record. The decision of the Committee is made by majority vote. If the Committee or the ACC does not act upon an application in two months, construction may begin.

In granting a certificate of environmental compatibility the Committee must require compliance with existing pollution standards, but it may not insist upon stricter standards than those already set by the "agency having primary jurisdiction over a particular pollution source." In addition, the Act requires that those planning an energy facility must file a 10-year plan with the Commission.

The Committee has no staff of its own. Thus, in a sense, it is not a new governmental entity since all of its state members are state agency officials.

Don Gilbert, Executive Director of the Arizona Atomic Energy Commission, explained the lack of staff, and the disinclination of the legislature to create an entirely new energy agency by referring to the political climate within Arizona. According to Gilbert, the proliferation of governmental agencies within the state is politically unacceptable, as is the appropriation of additional funds for new state functions. Thus the PP & TLSC uses existing state agency personnel and is entirely funded by application fees which range from $1,000 to $10,000, depending upon the facility in question. No compensation is paid to committee members, although their actual expenses for attending meetings are paid. Gilbert contended that the staffs from various state agencies such as the Department of Game and Fish, Division of Air Pollution Control of the Board of Health, Water Quality Control Council, and Arizona Water Commission are adequate to review applications. It was also his view that the diverse backgrounds and expertise of the committee members and their staffs ensured comprehensive evaluation of any aspect of a proposed energy facility.

Interviews with several state agency personnel whose agencies are represented on the Committee indicated that the participation and vigor of participants varies among agencies. Frequently mentioned as the most active participant in terms of questioning the utility representatives was the representative from the Department of Game and Fish.

If the PP & TLSC grants a certificate, the ACC must affirm it automatically unless a review is requested by a dissatisfied party. In review proceedings the ACC may either confirm the certificate or modify it with qualifications. However, if the PP & TLSC refuses to grant a certificate, the ACC may issue one.

The ACC's decisions are subject to judicial review only upon appeal by a person whose legal right or interest will be injuriously affected. Otherwise, ". . . no court may hear any case which was, or could have been, decided through the Siting Act."[6]

Those interviewed and the cited literature agree that the mood in Arizona when the Power Plant and Transmission Line Siting Act was passed, and the mood now is pro-developmental. There is scattered environmental concern which could, if it were more powerful, impede or alter the direction of industrial growth. Perhaps an indication of the lack of public support for certain aspects of environmental protection proposals was the rejection by Arizona voters of the "nuclear safety" initiative in the November election.

Because of the pro-developmental feelings in the state, it is not surprising to learn that the PP & TLSC legislation was drafted by the utilities and the Arizona Atomic Energy Commission. The latter has as its charge, ". . . to encourage fully the constructive development and uses of atomic energy and radiations and their sources consistent with the health and safety of workers and the public and consistent with powers and responsibilities of the federal government and other state governments." Nor is it surprising to learn from interviews and from the literature that there is considerable feeling that the PP & TLSC has not been vigorous in questioning development plans of utilities or in seeking to expand its role relative to overall energy need forecasting and planning for the state. Some persons interviewed (individuals not particularly hostile to the utilities) pointed out that the PP & TLSC did not possess high credibility because of a general belief that it was not an advocate of environmental concerns, but rather that it was a promoter of growth. The same statement was made of the ACC.[7]

The rather passive role played by the PP & TLSC may be explained by the laissez-faire perspective held by many committee members. As two critics have stated: "Many members of the Committee interviewed believe that policy decisions concerning need, choice among alternative sites, and long-term planning are not the proper concerns of a governmental review committee. According to these members, those decisions should be made by the private sector."[8] They suggest further: "Committee members see no need for the siting committee to make long-range evaluation or to consider and evaluate the factors which led to a utility's decision to expand."[9] On the other hand, some persons interviewed felt that the presence of the Committee, even if it was not particularly active, resulted in the utilities taking greater care in their environmental planning than before the creation of the Committee.

The reluctance of the Arizona legislature to create another funded governmental entity is certainly in tune with the anti-government expansion tenor of the times. However, it appears that giving another responsibility to existing agencies, as in the case of the PP & TLSC, does little to ensure that siting matters will receive high priority among the other responsibilities of involved agencies, unless a very determined effort is made by those agencies to rearrange their priorities.

By spreading siting responsibility among a number of agencies, no single agency is in charge nor finally accountable.[10]

Another adverse result of multiple responsibilities of state members, perhaps reflecting interest levels, is the low attendance at Committee meetings. For example, of the first ten case meetings, there were six times when eleven or fewer members were present; once when fifteen were present; twice when fourteen were present; and once when twelve were present.[11]

Another problem is the absence of a direct method provided in the legislation establishing the PP & TLSC for monitoring and enforcement of compliance with the Committee's decisions. For example, there have been instances when a member agency representative of the PP & TLSC, such as the Arizona Water Commission director, has added qualifications to the water management plan embodied in a siting proposal which had received certification, but provided no monitoring by endorsement of the Committee. In fact, the Arizona Water Commission responded to a questionnaire concerning the operation of the PP & TLSC in the following fashion: Question--"Do you believe the enforcement and monitoring of the Committee's decisions are adequate?" Answer--"No. This is probably the Committee's weakest area. In lieu of the establishment of a permanent staff, it has been suggested as appropriate that applicants be required to submit periodic progress reports to the Committee during the course of project construction to include such information as would indicate that they are operating within the guidelines established by the Certificate of Environmental Compatibility."[12]

According to the statute, the PP & TLSC becomes involved in siting only when an application is being processed and does not continue between cases. This lack of continuity contributes to the passive role of the Committee. Westerby, arguing for much enlarged activity of the Committee during the entire siting process, writes, "The Siting Committee needs to be involved continually throughout the planning stages and to assume a full independent administrative identity. Specifically, the Siting Committee should be reorganized as a Siting Commission with the following power: (1) Rule-making power in specified areas; (2) the authority to conduct long-range plant site evaluations; (3) the ability to utilize a 'counsel for the environment'; and (4) the authorization to conduct its business and employ support personnel through adequate budget appropriations."[13] Others would expand the role and time involvement of the PP & TLSC to include long-term and continuing assessment of energy need, not now one of the factors which the Committee is required to weigh.[14]

The lack of continuity, the lack of a staff, and the lack of funding are valid criticisms. At the same time, the question needs to be examined whether a low population state such as Arizona needs a permanent staff, in lieu of the PP & TLSC, for energy facility siting decisions which are likely to be far and few between.

Two other critical comments have been made. One is that the limitation of the enforcement powers of the ACC seemingly excludes non-investor owned corporations, such as the Salt River Project, from the jurisdiction of the Commission.[15] Rich, Carlisle, and Brown write:

"Although it /‾Salt River Project_/ goes through the procedure of filing applications, attending hearings, and filing 10-year plans, the Salt River Project makes a point of stating in the hearings and on their 10-year plans that they are not required by law to comply with the provisions of the Siting Act."[16] Whether this position is correct may have to be decided in court.[17]

In the Arizona context the perceptions of regional implications for siting regulation and activity appear in different ways depending upon what individual is being interviewed or whose article is being read. For example, Don Gilbert, Executive Director of the Arizona Atomic Energy Commission, was quite vocal in suggesting the states in the region which had no siting groups and procedures should create them in order to present a united front against the threat of federal preemption. His argument was that the region, if it did not thoroughly police itself with regard to siting, might, like a professional organization lax in self-regulation, find the federal government moving into the area. This view seems consistent with his stand when Arizona was considering creation of the PP & TLSC. Cortner and Ingram write: "The locus of decision-making on energy is also bound to be affected by the fit between political boundaries and the geographical impact of energy development. Moreover, regional coordination, interconnection, and pooling arrangements transcend state boundaries, making it impossible for any single state to control or regulate them."[18]

Utility representatives and one member of the PP & TLSC shared a common and critical perspective of federal interaction with the Arizona siting procedure, namely, the requirement that applicants make presentations to the PP & TLSC and federal agencies at different periods of time. The problem is stated in the following excerpt from a speech made before a BLM Utility Course by Alfred Colton, Supervisor, Environmental Division, Salt River Project, November 3, 1975: "Since our plant siting was to be in Arizona, we focused on the state siting process established by the State's Power Plant & Transmission Line Siting Act. As a result, we did not immediately pursue the federal process. Rather, since the State siting process results in an approval or disapproval of utility plans, whether on private, state, or federal lands, we pursued the state process first. Even though we had made considerable repeated contact with the federal agencies involved in siting action, we found the agencies reluctant to participate in the state process. In a six-day state siting hearing, no federal agency appeared or participated in the hearing, although all were notified and given the applicant's environmental report over a month and a half before the hearing. As a side note, the state certificate for transmission line routing will have been modified twice due to federal agency realignments. These realignments required two additional state applications and hearings. Thus, an iterative process between state and federal jurisdictions exists with the utility in the middle." One way to remove the iterative process to which Mr. Colton objects would be the establishment of a one-stop hearing process involving federal as well as state agencies.[19]

A rather special problem in Arizona, shared with New Mexico and Montana particularly, is the status of the Indian tribes. Westerby points out there is considerable doubt whether the Siting Act can constitutionally regulate plant siting on Arizona Indian reservations, locations in which are currently found the largest coal-fired plants in the state.[20]

ENDNOTES

[1] Hanna J. Cortner and Helen M. Ingram, Arizona Corporation Commission and Electrical Energy Policy, (University of Arizona: Institute of Government Research, 1976), p. 6.

[2] Power Plant Siting in the United States, published by the Southern Interstate Nuclear Board, 1974, pp. 11-15.

[3] Ibid.

[4] Cortner & Ingram, pp. 61-64.

[5] Cortner & Ingram, p. 61.

[6] David Allen Westerby, "Power Plant and Transmission Line Siting: Improving Arizona's Legislative Approach," 1973 Law and Social Order (No. 2), 1973, p. 523.

[7] A number of critical points have been made concerning the PP & TLSC and its mode of operation. To a large extent such criticism is found in three documents which originated in an academic environment. These documents are David Allen Westerby "Power Plant and Transmission Line Siting: Improving Arizona's Legislative Approach," 1973 Law and Social Order (No. 2, 1973); Hanna Cortner and Helen Ingram, Arizona Corporation Commission and Electrical Energy Policy, University of Arizona, Institute of Government Research, 1976, and Arizona's Electric Facility Siting Process: Evaluation and Recommendations, Jacqueline Rich, Nancy Carlisle, and Carolyn Browne, University of Arizona, Division of Economic and Business Research, 1976. Some of the same points were made by respondents to whom assurances were given that attribution would not be made.

[8] Cortner & Ingram, p. 69.

[9] Cortner & Ingram, p. 69.

[10] As one of the critical documents stated it, "Administration of the Siting Committee's needs and functions is performed by the staff of Siting Committee members, the Attorney General's office, and the Corporation Commission. The result is the siting process is difficult to identify, difficult to assess, and difficult to coordinate. There is no institution or person, readily available and readily identifiable who is totally knowledgeable about committee time schedules, procedures, activities, information and issues." Jacqueline Rich, Nancy Carlisle, and Carolyn Browne, Arizona's Electric Facility Siting Process: Evaluation and Recommendations, Division of Economic and Business Research, University of Arizona, 1976, pp. 5-6.

[11] Cortner & Ingram, p. 70.

[12] Questionnaire administered by Jacqueline Rich, Nancy Carlisle, and Carolyn Browne to members of PP & TLSC, March 10, 1976.

[13] Westerby, pp. 536-537.

[14] Cortner & Ingram, p. 68.

[15] Westerby, p. 535.

[16] Rich, Carlisle, and Browne, p. 28.

[17] Rich, Carlisle, and Browne (see p. 31) also point out that a utility can avoid the jurisdiction of the Committee by not applying for a certificate of environmental compatibility, then subsequently claiming statutory exemption on the grounds they made expenditures and commitments prior to the effective date of the legislation. The Siting Act, according to its definitions, only applies to those facilities for which expenditures or financial commitments for land acquisition, materials, construction or engineering in excess of $50,000 had not been made prior to the effective date of the Act--13 August, 1971. Rich, Carlisle, and Browne argue that such sized expenditures could have been made in the past for projects which will only come to light in the future. Only time will prove the validity of this criticism.

[18] Cortner & Ingram, p. 3.

[19] How this might be accomplished might be a subject for WINB investigation.

[20] Westerby, note 9 on page 520.

Section 3. Siting practice in the State of Washington

Washington was one of the first states to enact thermal power plant siting legislation.[1] The Thermal Power Plant Evaluation Council created in 1970 was the state's initial siting agency. By the spring of 1976 the siting council concept was expanded by an Act Relating to Energy, which broadened the siting activities of the state, replacing the first siting agency with the current Energy Facility Site Evaluation Council.

This council, like its predecessor, is composed of representatives from other state agencies having an interest in energy facility siting. An *ad hoc* representative from the county for which an energy facility is being proposed is also appointed. The theory is that in this way interested and relevant government agencies and departments, plus the impacted county, are given the opportunity to bring their expertise and in the case of the county its political perspective, to bear upon the recommendation for action provided by the Council to the Governor. This arrangement is felt also to reduce state expenditures since the work load of reviewing applications falls upon the personnel of existing agencies. The Council staff itself is small, consisting of two professionals and two secretaries.

In practice however, some feel that this arrangement may generate overloads for busy departments, and may mean that persons working on siting matters are unable to devote the necessary time to the process since their original responsibilities continue also to require attention.

Such a part-time operation is not unusual among the western states. It is defended because of reduced funding requirements, and also on the grounds that full-time council staff would not be fully employed since major energy facility siting decisions occur infrequently. This would seem to be particularly true of the states with low population in which one large thermal plant addition may be all that is required in each five year period. On the other hand, it was pointed out by persons interviewed in Washington, that as monitoring responsibilities increase the demand for a full-time staff will also increase.

To enhance the expertise brought to bear upon siting decisions, and in part to balance state agency judgments, the Washington Council is empowered to employ consultants to review utility applications. Funds for this activity come from fees paid by the applicants. A "Counsel for the Environment" is appointed from the Attorney General's staff to represent the public in regard to environmental matters at the hearings.

In Washington the Governor is the final decision maker in siting certification, accepting unaltered the recommendation of the Council, amending their advice, or rejecting it. A 1971 law journal article criticized this role assigned to the Governor:

> "A more fundamental defect in the Act is the incomprehensible decision to give the Governor the ultimate responsibility for approving or rejecting the certification. What this means is that after an elaborate legal and scientific evaluation of the proposed site by experts inside and outside of state government, the chief political officer of the state makes the final decision. The Governor wanted this power; nobody else wanted him to have it . . . . The Governor's formal decision making role is indefensible."[2]

The writer seems to minimize the political dimensions of siting decisions and to overlook the extent to which the Council's concern with the subject of need for energy involves political judgments. In practice the Council has been restrained in injecting political and need factors into its deliberations. Surely then it is particularly appropriate for the chief executive officer of the state to be responsible for relating public views on growth with siting proposals. This may in fact be preferred to having a technical state agency seek to reflect the state's political climate.

A recent example of how the current Governor, Dan Evans, operates as final decision maker on siting proposals is suggested in comments made by the Governor in connection with his approval of the certification of two nuclear power units to be constructed by the Washington Public Power and Supply System near Satsop, Washington.

> "I am very much concerned about the adequacy of overall forecasts of unrestricted need in the years ahead. Difficult questions in estimating electrical load forecasts for the state and region have remained unanswered through the analysis and study of this application."[3]

Two problem areas appear in Washington's siting procedures. One is the length of time required to move a siting application through the review process. In the statute 12 months is indicated as the time frame, but in practice it took 32 months for the Satsop case, and the Skagit application has been in process for almost 35 months, with a decision expected soon. The other problem, which may soon be presented to the Supreme Court of Washington for resolution, involves differing interpretations of the wording of the statute:

> "The state hereby preempts the regulation and certification of the location, construction, and operational conditions of certification of the energy facilities included under RCW 80.50.060 as now or hereafter amended."[4]

While the Council staff is of the opinion this authorizes preemption of local zoning, a county being proposed as the location for an oil tanker unloading terminal takes an opposite point of view.

An understanding of the Washington situation requires that mention be made of several rather special characteristics of power production and distribution in that state. (1)---approximately 80% of the state's electricity distribution is by noninvestor-owned utilities. Because of the political clout exercised by the Public Utility Districts (PUD's), organized into a powerful lobby known as the Washington Public Utility Districts Association, these noninvestor-owned utilities have been exempted from regulation by the state Utility and Transportation Commission. The PUD's generate and distribute electricity, or they purchase it from Bonneville Power Administration and distribute it. (2)---due to the "public preference" clause of Federal legislation governing operations of the BPA the relatively cheap electricity from federal hydroprojects must first be sold to public entities, i.e., PUD's.

A consequence of this arrangement is that in Washington there may often be a significant price differential between PUD rates and those charged by investor-owned utilities. The higher rates of the investor-owned utilities are likely to increase as fossil fuel and nuclear energy costs increase. In time, PUD rates may also increase because as hydropower sources are likely to be fully committed the PUD's will also have to go to more expensive thermal units such as the ones as Satsop, recently certified. Another consequence of the importance of noninvestor-owned power in Washington and the "public preference" clause, is that the logical regional partner for Washington, in terms of interstate siting and energy policy development, is Oregon since it too is in the Columbia basin. But Oregon has a much different system. In Oregon the inverse situation obtains, i.e., the bulk of power is supplied by investor-owned systems. This means a differential exists in both costs and rates between the two states. As thermal power costs rise this difference may become of increasing political significance to the consuming public. In fact it has been noticed by the Governor of Oregon, with resulting talk that perhaps the "public preference" clause should be removed to provide Oregon utilities a chance to buy the cheaper federal hydropower. This kind of talk is not always well received in Washington, and may contribute to conflicts between the neighboring states.

In spite of some differences in perspective between Washington and Oregon, there is also evidence of a growing interest in a regional approach to energy development. This is indicated by the fact that the governors of Idaho, Oregon, and Washington, have agreed to use Regional Commission funds to support a joint effort to develop an alternative load forecasting capability--alternative to that of the utilities. This study effort is headquartered in Portland under the direction of Mr. Mike Katz, on loan for two years from BPA. This interest on the part of the governors appears based upon a recognition that an essential factor in siting power plants is projection of the future demand for electricity. Currently such forecasting for the Northwest is primarily a product of the operating utilities, with little state input although Oregon is venturing into the business. Should the Katz projections differ significantly from those developed by the utilities, the state siting councils will have a basis for stiff questioning of future thermal plant proposals in terms of whether there is an established need.

It should be noted that a nuclear initiative which would have restricted construction of nuclear power plants was rejected by the voters in the November election.

ENDNOTES

[1] The original legislation and rules of procedure are found in Power Plant Siting in the United States, published by the Southern Interstate Nuclear Board, February 15, 1972, as part of the SINB's Topical Monograph Series.

[2] William H. Rodgers, Jr., "Siting Power Plants in Washington State," Washington Law Review, Vol. 47, No. 1, 1971, p. 31.

[3] News Release, "Governor Approves Nuclear Plants Near Satsop," Office of the Governor, State of Washington, August 26, 1976.

[4] Chapter 108, Laws of 1975-76, 2d Ex. Session (44th Legislative Session), p. 30.

Section 4. Siting practice in the State of Oregon*

Energy facility siting in Oregon has been designated a "single-stop" process for the applicant. Jurisdiction over the application review process is lodged with the Energy Facility Siting Council (which replaced the Nuclear and Thermal Energy Council), a seven member council of private citizens, the members of which are appointed by the Governor to serve not more than two four year terms. The Council does not have a staff. However,the staff of the Department of Energy, an agency created in 1975, serves the Council. It is the responsibility of the Council to advise the Governor on all matters concerning the siting of energy facilities, including whether a particular application shall receive siting approval, or be denied. Like Washington final authority rests with the Governor. The Oregon Public Utility Commission is the only other entity that possesses official status on matters of siting energy facilities.

The Energy Facility Siting Council was created by the Oregon Legislature in July 1975 as part of a comprehensive reorganization plan for state monitoring and regulation of the development and use of energy. The purpose of the Council was set forth in the statute as follows:

> "To exercise the jurisdiction of the State of Oregon to the maximum extent permitted by the United States Constitution and to establish in cooperation with the Federal Government a comprehensive system for the siting, monitoring and regulating of the location, construction and operation of all energy facilities in this state."

In 1975 the Department of Energy was also established. It presently has a staff of seventy-seven. As noted above, the staff of the DOE has the responsibility to serve the Energy Facility Siting Council. The Department also has responsibility for coordinating the permit review process among the several agencies required to certify and/or comment and evaluate applications. These include: the Department of Environmental Quality, the Water Policy Review Board, the State Fish and Wildlife Commission, the Health Division, the Water Resources Director, the State Geologist, the State Forestry Department, the Public Utility Commission of Oregon, the State Department of Agriculture, the Department of Transportation, the Department of Land Conservation and Development, and any city or county affected by the application. Recommendations by these agencies and political subdivisions have advisory status with regard to the Council's final recommendation to the Governor. The Governor's decision to grant siting authority to an applicant binds the State and political subdivisions thereof as regarding the construction and operation of the proposed facility. The affected state agencies are thereafter required to issue appropriate permits, certificates, or licenses, the terms of which are subject to conditions in the siting certificate approved by the governor.

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*Ms. Louise Buck contributed to this section.

The enabling legislation defines energy facilities broadly to include electric power generating plants, transmission lines, solar collectors, and pipelines of specified sizes and capacity. Not included in the definition are energy conversion facilities such as coal gasification or liquefaction installations. Although all applicants are required to submit to the Council a notice of intent to apply for site certification at least twelve months before the application is filed, the time period in which the Council must act upon the application and forward a final recommendation to the Governor varies with the type of facility under review. For example, the Council has twenty-four months to act upon an application for a nuclear installation or for a thermal power plant with a rating of more than 200 megawatts, unless the proposed facility is a combustion turbine power plant or a geothermal plant, in which case the maximum time limit is nine months. The time period for most other facilities is twelve months between submission of the application and the Council's recommendation to the Governor. The implication is that certain types of facilities are likely to warrant long study periods due to the magnitude of the associated impacts or the extent of controversy which may surround the siting of particular facilities.

Public hearings are to be held by the Council in the affected area of the State, and elsewhere as the Council shall determine, on all applications for site approval.

Filing fees are required of all applicants in the amount of $.05 per kilowatt of maximum planned net electric capacity of a proposed electric generating facility, or an amount equal to $1,000 for each $1,000,000 of estimated capital investment in other proposed facilities. These fees are reduced by the initial $5,000 fee which must be paid to the Department of Energy upon filing notice of intent to apply for a site certificate. The fees are used by the Department of Energy for the purpose of conducting studies related to the proposed facility.

Some concern has been voiced in the state that the various agencies and commissions which are required to review site applications already have other duties. Hence this additional workload may mean that less than comprehensive review could be the result. On the other hand, the system is defended in terms of all relevant state entities having a chance to bring their expertise to bear upon siting applications. In addition, as in most less populous states, the number of siting applications is not expected to be numerous.

The nuclear initiative on the Oregon ballot in the November election failed.

Section 5. Siting practice in the State of Montana

In 1971 a siting bill passed the Montana Senate, but failed to pass in the House. This bill would have given "one-stop" siting authority to the state Public Service Commission. Knowledgeable individuals have concluded that the bill failed because many members of the House were not convinced of the impartiality of the PSC. What apparently bothered some legislators was the belief that the PSC was biased in favor of the Montana power industry, and hence would be unlikely to make objective assessments of siting requests.

But in 1973 the legislature enacted the Montana Utility Siting Act of 1973.[1] And in 1975 this statute was superceded by a new Major Facility Siting Act. Also in 1975, the legislature enacted a temporary moratorium on plant siting approval, mandating the executive branch to formulate a long-term, comprehensive state energy policy, which would include a siting inventory for the state and a specific siting policy. The staff of the governor's office which is handling this assignment indicated that the policy review would be completed for public consideration in mid-fall, 1976, and would be submitted to the 1977 legislative session.

Primary responsibility for siting decisions, as established by the Major Facility Siting Act of 1975, falls upon the Department of Natural Resources and Conservation and the appointed Board of that department. The Department staff, within one or two years after receipt of an application for facility construction (the difference in time depends upon the type of facility), is required to report its recommendations and submit a final environmental impact statement (EIS) to the Board.

In preparing its recommendations and the EIS the staff of the Department of Natural Resources and Conservation draws upon the capability and experience of five other state agencies: the Department of Health and Environmental Sciences (air and water quality); Department of Highways: Department of Intergovernmental Relations; Fish and Game Department; and the Public Service Commission. Under the statute, these agencies are required to prepare reports, ". . . relating to the impact of the proposed site on each department's area of expertise. The report may include opinions as to the advisability of granting, denying, or modifying the certificate."[2] Funding for studies conducted by the Department of Natural Resources and Conservation and other state agencies is obtained from filing fees paid by the applicant. Funds not used are returned to the applicant.

Upon receipt of the report from the staff of the Department of Natural Resources and Conservation, the Board of Natural Resources and Conservation schedules a hearing to determine whether a "certificate of environmental compatability and public need" should be granted. Parties to the hearing include the applicant, representatives from affected municipal and other government agencies, any person living in the affected area, non-profit organizations formed to promote conservation or protect the environment, and staff from the Department of Natural Resources and Conservation.

Within 90 days of the last day of the hearing, the Board of Natural Resources and Conservation is required to make its decision. In determining whether to grant, refuse, or modify a certificate, the Board is required by the Major Facility Siting Act to find and determine:[3] (a) the need for the facility; (b) the probable environmental impact; (c) whether the facility represents the minimum adverse environmental impact; (d) a number of specific environmental factors; (e) in the case of electric, gas, or liquid transmission lines or aqueducts, whether the facility is consistent with regional plans for expansion of the appropriate grid of the utility systems serving the state and interconnected utility systems; (f) whether the facility conforms with local and state regulations, except that the Board may override local and state regulations if they are found "unreasonably restrictive"; (g) that the facility will serve the public interest; and (h) that the responsible state air and water quality agencies have certified that the proposed facility will not violate state and federally established standards.

The last requirement means that in practice Montana has a three-stop siting procedure with the Water Quality Division of the Department of Health and Environmental Science, and the Air Quality Division of the Department of Health and Environmental Science having to issue permits before the final siting certificate is obtained. On this subject the Major Facility Siting Act states:

> ". . . the judgments of duly authorized air and water quality agencies are conclusive on all questions related to the satisfaction of state and federal air and water quality standards."[4]

Procedure for appealing decisions of the Board of Natural Resources and Conservation is governed by the Montana Administrative Procedure Act.

The Board of Natural Resources and Conservation is also empowered to monitor compliance by applicants with respect to those facilities which have been certified. Violators are subject to a penalty of not more than $10,000 or imprisonment for up to one year, or both.

Under the Act utilities are required to submit 10-year plans to the Department of Natural Resources and Conservation for review, and the Department is required to evaluate all facility construction sites proposed for use in the next five years. More than 50 factors are to be included in the review and evaluation, including (1) energy needs; (2) growth and demand projections; (3) alternative sources of energy; (4) promotional activities of the utility which may have given rise to the need for the facility; (5) air and water quality impacts, and other environmental impacts.

The siting procedures described above were put to a major test in the spring and early summer of 1976. At issue was an application filed by the Montana Power Company to build two 700 megawatt units at its Colstrip facility, where two 330 megawatt units already are in operation. The application caused a major public controversy with strong feelings on both sides. The immediate outcome (court appeals may lie in the future) was that the staff of the Department of Natural Resources and Conservation recommended to its Board that the two units not be certified. The major reason given by the staff for opposing certification was that need for the 1400 megawatt capacity of the two new units had not been adequately proved. In part this conclusion rested on the fact that much of the electricity from the 3rd and 4th Colstrip units was destined for consumption beyond the borders of the state of Montana, in the Northwest, and possibly in California. Some of those opposing the application felt that while Montana had some responsibility to make its abundant coal available to other states, that responsibility did not extend to permitting the coal to be burned in Montana with attendent air and water quality problems such combustion would engender. There was some feeling among state personnel that a more economic and environmentally equitable method of utilizing Montana coal would be to ship it for combustion in the using states (e.g., with the plants being placed along the Columbia River in Washington/Oregon).

This philosophy of mining Montana coal, but burning it outside the state so that the environmental burden of such combustion is borne by the user state has been simplified in the popular political slogan, "strip & ship." It might be noted that similar issues may surface in three or four other WINB region states. At the same time this view seems to ignore regional interdependence and the existance of the WSCC power grid with its interties developed under Bureau of Reclamation sponsorship, between Missouri River and Columbia River hydrosystems benefitting Montana as well as other states. It ignores, also, the present relationship of Northwest power to California demands. (See Section 1 of this chapter).

In an action which created considerable political fallout, the Natural Resources and Conservation Board overruled the recommendation of its staff, by a 4-3 vote, and recommended certification of Colstrip units 3 and 4. It appears that differences developed between the staff of the Department and the Board on the meaning of "need" . . . whether this meant Montana need or regional need, and how need was to be determined. This issue, too, will be raised ever more frequently.

Needless to say the Board's overruling of the Department's recommendation resulted in some deterioration in the morale of the Departmental staff. Some observers expressed concern that a "political body" could and would overturn the findings of a technical staff seeming to minimize the fact that technical decisions are ultimately political and not value free.

Two aspects of the siting situation in Montana carry special implications for regional energy policy. The first is the earlier cited fact, unique among the eleven WINB states, that the Major Facility Siting Act sets forth as one criterion examination of the relationship of energy transmission facilities to the regional grid distribution system. The second is that in the Colstrip 3 and 4 siting decision the issue was raised as to what should be the relationship between Montana coal, and neighboring states with a need for coal-generated electricity.

Montana shares another complex problem with New Mexico and Arizona--that of the Indian tribes upon whose land is water and under whose land is coal. The state tends to view the Indians as sovereign, and considers new federal legislation as the only means to bring Indian lands under state control. But state officials are not optimistic that the Congress will so legislate in the near future. So the problem of Indian lands may remain unresolved, litigaion on a case-by-case basis being used to establish rights and priorities.

It should be noted that the Montana nuclear initiative failed in the November general election.

ENDNOTES

[1] A copy of this law is found in Power Plant Siting in the United States, published by the Southern Interstate Nuclear Board, February 15, 1972.

[2] Montana Law, 1975, Ch. 494, Sec. 10.

[3] Montana Law, 1975, Ch. 494, Sec. 10.

[4] Montana Law, 1975, Ch. 494, Sec. 10.

Section 6. Siting practice in the State of Wyoming*

The Wyoming Industrial Development and Siting Act was adopted by the Wyoming legislature in March 1975. The principle thrust of the Act is to provide for public consideration and regulation of specified areas of concern which are outside the purview of existing agencies having jurisdiction over the siting and operation of major industrial and energy facilities. The significance of the Act, in general, with regard to the siting of electricity generation and transmission facilities is to create an additional major permit requirement beyond the more traditional Certificate of Public Convenience and Necessity from the Public Service Commission and environmental pollution control permits from the Department of Environmental Quality. With the passage of the Siting Act, applicants are now required to give thorough consideration to socio-economic impacts that proposed facilities are likely to have upon the local and state community.

The Act thus provides for increased consolidation within the siting process only to the extent that _all_ state agencies, other than the PSC and the DEQ, are now required to review and comment on an application in the light of specified criteria established by the Act. In the language of the Act, the Public Service Commission shall retain authority which it has or may be granted relative to certificates of convenience and necessity, rates, interchange of services and safety regulations . . . the Department of Environmental Quality shall retain authority which it has or which it may be granted to determine compliance of the proposed facility with state and federal standards and implementation plans and to enforce those standards . . . Thus an applicant is required to undergo separate permit review processes as required by each of those agencies.

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*This section of the report was drafted by Ms. Louise Buck.

A bill for the Siting Act was first introduced in the Wyoming legislature in 1974 and was patterned after Montana's Siting Act. The basic issues of concern were the need for advance notice of industrial and energy development plans so that localities could anticipate and plan for the associated impacts, and for incorporation of a land use planning element into impact mitigation strategies. The Wyoming bill differed from Montana's Siting Act insofar as less emphasis was placed upon environmental impacts than on socio-economic impacts.

The bill drew much public attention, but died in the Senate. Energy companies lobbied against the bill--Panhandle Eastern and Pacific Power and Light in particular. The Wyoming Taxpayers Association also opposed the measure. The principle criticisms of the bill were that lead times required between submittal of the application and permit authorization were too long and the excess red tape created by the requirement of an additional major permit was burdensome.

Between the 1974 and 1975 legislative sessions, the Mining and Industrial Development Committee of the Senate studied the matter and reported out two new versions of the bill. At the same time the author of the original bill introduced another House version which was generally more restrictive than the Senate versions. During the 1975 legislature a joint House/Senate Committee worked over the bills and it was here that the idea of a two-step permit review process was introduced. This two-step procedure was intended to cut short approval time for small scale, often less controversial developments, while permitting a longer period for more thorough analysis of large facilities. In fact, this two-step procedure represented a compromise between the House and Senate bills and probably made passage of the siting act possible.

The Act created the State Industrial Siting Administration and an Industrial Siting Council of seven members appointed by the Governor. The Council promulgated rules and regulations to implement the Act. The Council was also authorized to hire an Administration Staff Director, who in turn was given authority to hire subordinate staff. The professional backgrounds of current staff members include engineering, sociology, natural resources, and ecology. The staff is provided legal services through the State Attorney General's Office.

Under the provisions of the Act, a permit must be obtained prior to commencement of construction of any industrial facilities, defined to include facilities which generate electricity of 100 megawatts or more or additions to existing facilities which will increase the capacity by 100 megawatts or more. Also included under the definition are facilities of specified sizes for synthetic gas production, liquid hydrocarbon production, uranium enrichment, and other facilities having an estimated construction cost of fifty million dollars or more.

Specifically excluded from coverage are: railroad construction, electric transmission lines not exceeding 115,000 volts, oil and gas pipelines, coal slurry pipelines, natural gas pipelines and construction or operation of oil and gas producing, drilling, and field processing facilities.

Applications for a permit must be accompanied by a fee not to exceed one-half of one percent of the estimated construction cost of the facility or $100,000, whichever is less, the actual amount of which is determined by the Director of the Industrial Siting Administration on the basis of estimated costs of processing the application.

The two-step review process, which was alluded to above, is designed so that the Siting Council must conduct an initial hearing within forty to sixty days of the filing of an application. In summary, the contents of the application must include a description of the proposed operation, a statement of why the proposed location was judged superior, an assessment of associated impacts, and a proposed plan for impact mitigation. Within 60 days following the public hearing, which must be held in a community near the proposed facility and to which any person or group may become a party by filing with the Council 10 days prior to the hearing date, the Council may make an initial determination as to whether the application will be approved with no conditions, approved conditioned upon construction start-up within a certain time frame, approved conditioned upon specified changes in the application, or rejected pending further study as required by the Council. The principle basis upon which the Council's initial determination must be made is demonstration by the applicant that the proposed facility will comply with all applicable laws and will not pose a threat of serious injury to the environment nor to the social-economic situation of inhabitants or expected inhabitants in the affected area.[1]

If the applicant fails to carry the burden of demonstrating compliance with the requirements in step one, then the application moves to step two involving a more intensive investigation of the proposed facility. Under these circumstances, the Director must prepare and review with the applicant a detailed study design and fee assessment plan to cover the determined gaps in the initial application. Following Council approval of the study design, intensive studies of the proposed facility are undertaken by the Director and his staff, covering a wide range of items which are set forth in the Act including: the purpose of the facility, land use impacts, water resource impacts, air quality impacts, radiation impacts, noise impacts, and social and economic impacts. The maximum allowable time for the detailed study is 300 days; there is no minimum length of time specified in the Act.

To date the Siting Council has received only two applications. Shortly after the Council was established, Pacific Power and Light submitted an application for a permit to construct an additional unit at the Jim Bridger power plant. In the words of one of the Siting Administration staff members, this application "sailed through" the review process and was granted approval during the initial stage.

The second application received by the Council was from the Missouri Basin Power Project to construct the 1500 megawatt Laramie River Station at Wheatland. (See Chapter III, infra.) The Missouri Basin Power Project's application was also approved and a permit granted with specified conditions on initial determination by the Council, thus avoiding the second step of the process. According to one of the original sponsors of the legislation, the intent of the Act was that a proposed plant of 1500 megawatts should have involved the second stage process. As indicated in Chapter III, this question is now being litigated. It should be noted, in any case, that the Missouri Basin Power Project applicants had committed substantial resources to securing Project approval, including getting water allocation permits and air and water pollution approvals before the Siting Act was adopted. With respect to impact amelioration, the Council attached specific conditions which, if met, will minimize many expected adverse consequences.

Following the Council's decision on the Wheatland plant and the controversy which surrounded it, a study committee was appointed by the Governor to investigate and recommend changes to the Siting Act. The Committee's recommendations are to be forthcoming in the fall of 1976.

Preliminary indications are that recommended changes will most likely be procedural rather than substantive. Although there is clearly a need in Wyoming for the establishment of a forum in which to consider the broader, philosophical issues of long-range priorities for resource development and conservation, the Wyoming Industrial Siting

Act does not give a clear mandate to the Council to provide such review and policy development. Thus, the Council prefers to proceed cautiously and conservatively in interpreting and exercising its powers. It is felt by some that by going to the second stage in the permit review process, at least a certain amount of consideration would be given to broader issues. However, evidence of the likelihood that the legislature did not intend the Siting Council to undertake significant steps in this direction lies in the fact that decisions involving the use of water in Wyoming, and the need for power, continue to lie with the State Engineer and the PSC respectively. Thus, at this point in Wyoming's political development concerning energy/environmental issues, the legislature may provide the forum for debate on the philosophical questions concerning Wyoming's future development. (Key proposals of the Governor's study committee are outlined in Chapter III, *infra*.)

ENDNOTES

[1] *Wyoming Statutes*, 35-502.82 (e) (Supp. 1975).

[2] *Ibid.*, 35-502.84 (a) (Supp. 1975).

Section 7. Siting practice in the State of New Mexico

New Mexico does not have a specific council, committee, or commission for electric energy facility siting. Prior to 1971 the Public Utility Commission, in exercising the power to grant or refuse a certificate of public convenience and necessity for construction of, ". . . any public utility plant or system. . ."[1] considered more-or-less traditional information of significance to service quality and operational economics. In 1971, however, the legislature found that, ". . . it is in the public interest to consider any adverse effect upon the environment and upon the quality of life of the people of the state which may occur due to plants, facilities and transmission lines needed to supply present and future electrical services."[2] The legislature, therefore, added a supplement to the Public Utility Commission statute providing, ". . .for the supervision and control by the commission of the location within this state of new plants, facilities and transmission lines for the generation and transmission of electricity for sale to the public."[3]

The legislature instructed the Public Service Commission to approve applications for location of generating plants and transmission lines, ". . .unless the commission finds that the operation of the facilities for which approval is sought will not be in compliance with all applicable air and water pollution control standards and regulations existing."[4] In New Mexico the state air and water quality standards are the responsibility of the Environmental Improvement Agency. The Public Utility Commission is not empowered to set higher standards for air and water quality than those set by the Environmental Improvement Agency, which at present tend to be those set by the Federal EPA.

The Public Utility Commission has authority to override state and local zoning regulation if ". . .the commission shall find that such regulation is unreasonably restrictive and compliance therewith is not in the interest of the public convenience and necessity, in which event and to the extent found by the commission, such regulation shall be inapplicable and void as to the siting."[5]

In 1975, the legislature established an Energy Resources Board, which is currently developing a comprehensive energy plan for the state, to include the matter of siting. The plan is expected to be completed in the fall of 1976. The Energy Committee of the legislature is also working upon aspects of state energy policy and its work is to be completed in the fall of 1976.

Conversations with staff members of the Energy Resources Board and with the Legislative Energy Committee indicated an attitude somewhat analogous to that of the OPEC nations -- i.e., as a small state with a low per capita income (48th out of the 50 U.S. states), having rich energy resources which are coveted by larger political entities, New Mexico needs to find ways of recouping losses of exhaustible resources. This perspective will undoubtedly influence any energy policy adopted by the state, and may directly affect regional policy on siting.

Energy policy in general, and siting policy in particular, will probably be designed to facilitate what seems to be the basic objective of the state, namely, to utilize energy resources in a way to gain revenue to support the building of an economic base that will serve the state in the future when energy resources will be depleted. Such a policy for New Mexico would likely include efforts to minimize adverse impacts of energy development upon the environment. However, some trade-off between economic development and preservation of the environment will likely be made, with development being favored more than in some of the WINB region states.

An example of efforts to implement the previously discussed policy, illustrating some of the difficulties with regard to New Mexico taking a regional approach to energy development, is the tax recently placed upon electricity exported from the state to neighboring states. Of questionable constitutionality, this measure has been attacked by Senator Fannin of Arizona, a state to which some of the exported New Mexico electricity is carried. Senator Fannin's response to the tax was to introduce a bill in Congress prohibiting such taxes. As of September 1976, Senator Fannin's bill had handily passed the Senate and was likely to pass the House of Representatives. The question of New Mexico taxing exported electricity is currently under consideration by a U.S. District Court in New Mexico. Obviously, the situation does not contribute to cordial interstate relations.

One response, being discussed in Santa Fe shortly after the passage of the Fannin bill by the Senate, was for the state to "get tough" over air pollution caused by plants producing the electricity destined for export to Arizona. It was hoped that somehow by threatening stringent regulation of air pollution, New Mexico would persuade Arizona to pay a "reasonable" price for New Mexico electricity. Whether this threat will become a reality in New Mexico siting legislation is not yet known. If it does, the resulting situation will not be unlike the pre-1787 situation among the original thirteen states operating under the Articles of Confederation, when similar economic recrimination was frequent. The economic chaos associated with the era of the Articles was soon replaced by a strong Federal government which preempted interstate commerce regulation under the Constitution, setting uniform standards to facilitate economic development among all the states.

Should New Mexico's action be regarded as punitive toward Arizona in the dispute over the price of electricity, this conflict will point up what is wrong with siting policy established solely on the basis of state political boundaries, at a time when the electrical grid distribution systems operate within much different bounds. Paraphrasing the Supreme court in an early case, "We are, after all, one nation."

Another type of energy dispute between New Mexico and Arizona, now scheduled for hearing by the New Mexico Public Utility Commission, concerns the question of whether the New Mexico PUC has an interest in a nuclear power station, Palo Verde, located near Phoenix, Arizona. The hearing is to decide whether, because the New Mexico Public Power Company is a participant in the Palo Verde plant, the New Mexico PUC should involve itself in plant certification and operation. The hearings are to be concluded early in the fall of 1976.

A particular problem in New Mexico, similar to one in Arizona and Montana, is how the state shall relate to twenty-two Indian tribes. The matter is important for energy policy because much of the coal and uranium and some gas and oil, are found under lands belonging to the tribes. Although definitive court decisions do not exist, the general feeling among state officials is that the Indians are sovereign, and negotiations are man tory. To this end, representatives of the Energy Committee's staff met with the twenty-two tribes in August to ascertain if common ground exists between the Indians and the state. The point of departure for the state was that the Indian tribes should view themselves in much the same fashion as the state perceives itself--i.e., being under-developed with low per capita incomes, but possessing energy resources of considerable value wanted by economic interests in other states.

The Energy Committee of the legislature has been involved in two activities with implications for regional energy policy. One is the establishment of the Southwest Regional Energy Council, with assistance from the FEA. It is run by a three-person staff located in Dallas, Texas. Funding for the Council is supplied by appropriations of $7500 from each of the legislatures of New Mexico, Oklahoma, Texas, Arkansas, and Louisiana. The purpose of the Council is to develop information on energy resources and uses in the five participating states, and to increase the level of understanding of energy problems by participating legislators. Similar joint legislative efforts crossing state boundaries dealing with siting might help establish a political framework reflecting the electric grid bounds.

In its 1976 report to the 32nd legislature, the Energy Committee indicated its awareness of the need to educate legislators as to the parameters of energy problems in the west.[6] If this kind of awareness exists elsewhere, there could be fertile ground for education regarding the disparities between the geographical bounds of states and the western electrical grid.

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[1] Article V, 68-7-1, New Mexico Public Utility Act as Amended.

[2] Article V, 68-7-1.2, 1971 Supplement to New Mexico Utility Act.

[3] Article V, 68-7-1.2, 1971 Supplement to New Mexico Utility Act.

[4] Article V, 68-7-1.2, 1971 Supplement to New Mexico Utility Act.

[5] Article V, 68-7-1.2, 1971 Supplement to New Mexico Utility Act.

[6] Legislative Energy Committee, Report to the 32nd Legislature, January, 1976, p. 6.

Section 8. Siting practice in the State of Idaho

Power plant siting in Idaho currently falls under the jurisdiction of the Idaho Public Utilities Commission which operates under a statute written in 1913, with few amendments since that time. The statute grants the Commission power to issue Certificates of Convenience and Necessity which are intended to safeguard the public health and safety. According to the state Attorney General, the PUC currently has discretionary authority to explore the entire realm of factors involved in power plant siting. However, the PUC is neither required to do so nor have guidelines been established with respect to investigation of the various elements that go into proper power siting decision making.

Historically, the PUC has been involved primarily in railroads and other common carrier regulation. It should be noted, however, that previous Attorneys General ruled that the PUC does not have legal control over actual site selection or environmental considerations. Responsibility for such decisions may lie with the Health and Welfare Department, the Department of Water Resources and with local governments. The PUC statute provides no timetable for reaching a decision, no method of financing studies, and no obligation to include other government agencies in the siting decision.

The situation may be changing rapidly, however. A November 4, 1976 news story in the Christian Science Monitor reported:

> "The Idaho Public Utilities Commission has presented the people of Idaho with a clear-cut statement of options for balancing energy needs with environmental concerns.
>
> 'The politically divided board issued a 3-to-0 decision last month denying Idaho Power Company the right to build Idaho's first coal-fired electrical generating plant. But the board couched the denial in language that makes it clear a subsequent application will be approved unless Idahoans take definitive action preparing a workable state energy plan".

The news article summarizes the announced position of the Idaho PUC as follows:

> "The IPUC has made it clear that:
> 1. Any plant that is built in Idaho must meet strict environmental standards. The Public Utilities Commission will not leave it up to federal agencies, the state health department, or anyone else to enforce that; it will enforce environmental standards itself.
> 2. If demand increases and power companies cannot come up with environmentally sound proposals, the IPUC is going to allow coal-fired (and perhaps atomic-powered) generating plants to be built.
> 3. If the people of Idaho do not want the plants, they will have to act quickly - either by persuading their lawmakers to prohibit them or by reducing the demand for electricity by conserving energy".

From the news story it would appear that regional factors received little attention in this precedent-making decision!

In 1974, the Department of Water Resources prepared a study which included projections that Idaho will require between eight and twelve 1000 megawatt electrical generating plants by 2020, with perhaps four in construction by 1985. The Department also projected a lack of water resources to attain this level of power production, and the Governor has responded, in part, with a conservation program. The Governor appears, however, to be uninterested in Idaho becoming a power generating station for other states.

The report also commented on the need for power plant siting legislation, concluding that "on the state level, a responsible organization is needed to coordinate planning and installation of electrical power facilities in the state . . . the state coordinating body should also be given authority for siting of power projects within the state of Idaho".

Power plant siting legislation was proposed in the 1976 legislature, Senate Bill 1401, but defeated. Because it is expected that a similar bill may be reintroduced, especially in view of the PUC opinion, it is significant to mention the provisions of the defeated bill.

It provided for expansion of the PUC's statutory authority and obligation, making it the lead agency in the siting process. Other state agencies and local units of government were to be contacted and given an opportunity to submit studies. The hearings were to have taken place within nine months after receiving the utility's application, and a decision was to have been reached within six months after the end of the hearings. Further requirements of the bill were that the application was to have been accompanied by a filing fee related to the cost of the facility. The bill required that the Commission's decision should be based on findings of fact on the following issues: need for the facility, financial ability of the applicant, environmental impacts, availability of alternate sites, the relative weaknesses of alternative types of facilities, and impact on the state water plan.

The bill's sponsor, quoted in the Coeur d' Alene Press on March 19, 1976, explained what happened to Senate Bill 1401: "The efforts to destroy siting legislation this year, efforts that were ultimately successful in the House, ran the gamut from intense arm-twisting to downright misrepresentation. The utilities, the rural electric cooperatives, big labor (through AFL-CIO president, Robert MacFarlane) and big industry, all joined in the effort to defeat Senate Bill 1401. They labeled the bill 'anti-growth.' They claimed that the PUC did not need the bill even though the PUC drafted it. Power plant siting legislation is dead for this session. But the tremendous public concern for power plant issues, and the obvious, glaring lack of a proper siting authority in Idaho, places this issue among the priorities for next session. I predict that it will be a crucial campaign issue as well."

Idaho's Governor has established energy conservation as one of his major objectives, and has commissioned the director of the new energy office to proceed with establishing a viable plan for accomplishing aggressive energy conservation goals.

Section 9. Siting practice in the State of Nevada

Nevada in 1971 enacted the "Utility Environmental Protection Act" (Nevada Revised Statutes 704.820 to 704.900) which has as its stated purpose "to provide a forum for the expeditious resolution of all matters concerning the location and construction of electric, gas, telephone, telegraph, water and CATV transmission lines and associated facilities."

The legislature recognized the continued and growing need for electric utility services and the essentiality of minimizing adverse effects upon the environment and the quality of life. To this end the statute sought to strengthen laws and practices relating to the location of such utility facilities, and expressed a concern for "total cost to society of such facilities."

Rather than creating a new agency or establishing a siting council, the Nevada legislature expanded the authority of the Public Utility Commission, requiring all public utilities to secure a construction permit from the Commission (after July 1, 1971) for electric generating plants and transmission lines of 60 Kilovolts or more. Applicants must include with their request information (a) describing location of the facility, (b) summarizing any environmental statements, (c) explaining the need for the facility, (d) describing reasonable alternate locations with an analysis of merits and detriments of alternatives and justifying the preferred location, and (e) such other information as may be relevant or required.

Provision is made for hearings on the application and the Environmental Commission is required to review the application and participate in the hearings. The Commission has the responsibility to grant or deny a permit. It may not grant a permit for the construction, operation, and maintenance of a utility facility unless it finds and determines (a) a need for the facility, (b) the environmental impact, (c) that the adverse impact will be minimized, (d) that the location of the facility conforms to state and local laws, and (e) that the facility will serve the public interest.

Of particular regional significance is the authority granted to the Commission to require as a condition of receiving a permit that the utility make available for use within Nevada "an amount of electrical energy equal to or less than the amount exported" to other states. Finally, the Nevada Commission is authorized "to negotiate and enter into agreements on compacts with agencies of other states, pursuant to any consent of the Congress, for cooperative efforts in permitting the construction, operation, and maintenance of utility facilities" pursuant to the purposes of the Utility Environmental Protection Act.

Section 10. Siting practice in the State of Utah

Utah does not have an explicit energy facility siting procedure. A bill on this subject failed of enactment in the 1975 legislative session.

Air quality and water quality controls are within the jurisdiction of the Department of Health with decisional authority vested in an Air Conservation Commission and a Water Pollution Control Commission within the Department. Control policies must conform to federal requirements as established by EPA.

If construction of an energy facility is proposed by a new utility, it must secure the traditional certificate of Convenience and Necessity from the Utah Public Service Commission. That certificate defines the service area of the utility within which it is free to construct facilities in accordance with its own determinations of need. The utility may also extend service to contiguous areas where these are not served by another utility.

Two factors in the Utah situation deserve special attention. First, although the state has neither an environmental act nor a land use law, utilities operating in the state are generally required to prepare environmental impact assessments because their transmission lines, if not their generating facilities, impact public domain lands and permits from the federal government will therefore require environmental impact statements under the National Environmental Policy Act of 1969 (NEPA). The same is true of many Western States.

Second, Utah's coal deposits are of such quality and quantity to attract the interest of utilities operating in other states. As a consequence, this state will constantly be confronted with proposals for mining its coal and possibly for generating power for export to other states. Legal institutions of the state for dealing with these situations are at best primitive.

Section 11. Siting practice in the State of Colorado

Colorado does not have an energy facility siting law. Instead a number of state agencies, plus local political units, exercise the authority to grant a variety of permits for the establishment of energy facilities. The state entities are the Public Utilities Commission; the Air Pollution Control Commission, which is located within the Department of Health; the Water Quality Control Commission, located within the Department of Health; the State Engineer's Office, located within the Department of Natural Resources; the Ground Water Commission, located within the Department of Natural Resources; state district courts in which water judges exercise jurisdiction over water matters. Local government entities are Boards of County Commissioners, County Clerks, County and Municipal Zoning boards and Planned Unit Developments. The duties of these governmental bodies in regard to energy facility siting are briefly outlined below.

The Public Utilities Commission must grant a certificate of public convenience and necessity before any public utility can construct a new facility or any extension of an existing facility. These requirements are not in effect when a public utility extends service within a city and county or city or town within which it is already providing service, or an extension into territory contiguous to its present facilities and which is not now served by any public utility providing the same kind of service. The PUC authority does not extend to municipally owned utilities serving within their municipal boundaries.

The Air Pollution Control Commission is responsible for ensuring the use of all available and practical means to reduce, prevent, and otherwise control air pollution. The Air Pollution Control Act which establishes the Commission requires that any person constructing or substantially altering any facility, except single family dwellings, which constitute a new air contamination source, or an indirect air pollution source, obtain a permit for such construction. The Commission's air pollution control activities are under the general surveillance of the federal Environmental Protection Agency under the Clean Air Act (42 USC 1857 et seq.).

The Water Quality Control Commission directs a state permit system designed to regulate the discharge of pollutants including thermal pollution into any state waters. Its activites are also under EPA surveillance pursuant to the Federal Water Pollution Control Act as amended (P.L. 92-500).

The Office of the State Engineer must approve the plans for any industrial facility which involves the construction of a reservoir with a capacity in excess of 1,000 acre feet, or the construction of a dam higher than 10 vertical feet.

The Ground Water Commission must approve applications from developers who wish to appropriate ground water before the Office of State Engineer issues conditional (of one year duration) or final permits.

In Colorado, Boards of County Commissioners may exercise authority regarding energy facility siting due to their authority with respect to zoning, solid waste disposal, and subdivision development.

Local governments, municipalities and counties are empowered, after public hearing, to designate specific areas and activities of state interest which are defined by statute to include major facilities of a public utility and the siting thereof. Such local governments may grant or deny permits for developments in designated areas or for activities of state interest subject to general review by the Colorado Land Use Commission. State district courts are empowered to review the granting of such permits.

In 1976 seven state representatives introduced a bill to establish a state energy facility siting program and create an Energy Facility Siting Board.[1] The Board was to have been composed of the executive directors of the departments of Health, Agriculture, Local Affairs, and Natural Resources. In addition the Governor would have appointed three citizens to the Board. The general duties of the Board were to have been to hold hearings and adopt rules concerning applications for the siting of energy facilities, and to grant or deny permits for the siting of such energy facilities.

The Energy Facility Siting Board bill passed the Colorado House but was killed in the Colorado Senate. The success of the bill in one legislative body and its failure in the other legislative body is partially explained by the composition of the House and the Senate. The former is (but will not be when the new legislature meets in January) controlled by Democrats. The latter is (and will continue to be when the new legislature meets) controlled by the Republicans. The seven sponsors of the bill were Democrats. Adding to the political overtones of the bill's passage in one body and defeat in the other is the fact that Colorado Governor Richard Lamm is a Democrat with a pro-environmental image, or according to some, an anti-growth image. The apparent belief among Republican members of the legislature that an Energy Facility Siting Board might reflect the anti-growth philosophy attributed to the Governor, helped doom the proposed legislation in the Colorado Senate.

During the summer of 1976 a legislative committee, charged with energy and transportation matters, after holding hearings regarding another energy facility siting proposal, decided not to introduce such legislation in the next General Assembly. However a new energy facility siting bill may be introduced without committee endorsement.

As long as new energy facilities can be sited without undue delay, and given the political complexion of the new General Assembly, it seems unlikely that energy facility siting legislation will be forthcoming in Colorado. The threat of federal preemption might possibly alter this prognostication.

It should be noted that a 1,000 megawatt coal-fired plant, to be located in Morgan County and called the Pawnee Plant, has recently passed through state and local government siting procedures, after some delay at the county level, and with a legal challenge pending in court. A second 1,000 megawatt coal facility is now in the public hearing phase at the county level to be located in Weld County near the town of Nunn. It should also be noted that Proposition Number

Three on the general ballot in Colorado November 2, 1976, which would have placed substantial restrictions upon the future development of nuclear power plants, failed at the polls.

ENDNOTES

[1] House Bill No. 1253, A bill for an Act Establishing a State Facility Siting Program.

Chapter III. SELECTED EXAMPLES OF RECENT SITING DECISIONS

As indicated in the first chapter of this report, this investigation was particularly concerned with regional factors in planning and siting energy facilities in the eleven Western members of WINB (excluding Alaska). To this end, an examination of actual recent siting situations in several of the states provides insight into the process and particularly indicates weight given to regional factors in siting decisions. The original research plan anticipated as many as six detailed case studies of actual siting decisions. This proved infeasible for several reasons.

While many detailed case studies might well have been interesting and perhaps useful, neither time nor funding permitted such investigations. To accurately record and analyze the many steps in even one siting decision at a minimum takes several weeks. Thus it seemed apparent that detailed case studies even in states having so-called "one-stop approval" systems, would be more complex and involve many more actors than we had assumed. In addition, the number of siting decisions made in the last one or two years was fewer than we had anticipated, and records on the process are often obscure and not readily accessible. The further back in time we went, the more difficult it was to reconstruct what and who had been involved.

Moreover, from the several studies which we did undertake it seemed apparent that we might easily have become bogged down in state siting processes and problems thereby losing the main focus on regional factors and regional perspectives. The following accounts, therefore, are based on investigations of varying depth and detail, but sufficient to provide insight into how states deal with siting issues, and to test our hypothesis that only slight attention is given to regional aspects of energy facility siting.

Most information was gathered on the Wheatland Project located in Wyoming, North of Cheyenne.* This seemed a particularly significant investigation since the project had been approved by the newly created Wyoming Industrial Siting Commission and illustrates how the approval process may be affected by an agency with explicit siting responsibilities. A less detailed but nevertheless careful study was made of the decision processes in the case of the Yampa Project located in Northwest Colorado near Craig.

Wheatland and Yampa are comparable in that both are being developed by consortia of noninvestor-owned utilities. They are approximately similar in planned capacity. They provide useful contrasts, however, since the Yampa Project has been developed without explicit state siting approval, Colorado having no siting statues.

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*A separate report is being issued on this project, the material in this Chapter being a summary of the more detailed analysis. It was possible to study this project in depth because of its proximity to Fort Collins and more importantly because the research assistant, Ms. Louise Buck, was financed in part by a National Science Foundation grant. The resulting report will serve the requirements of NSF as well as provide the basis for our summary.

The remaining discussions of specific siting situations are based on cursory reviews presenting brief vignettes to illustrate particular aspects of siting decision making--particularly the degree of attention given to regional factors.

As suggested above, energy facility siting in each of the states is a relatively infrequent occurrence. Wyoming has had the Wheatland Project, and we have no information that any other plant will be proposed for siting approval in the next several years. Two power plants have recently been proposed in Colorado, (at Pawnee and at Nunn), each with initial capacities of approximately 1000 megawatts. Utah Power and Light Company has a new plant South of Salt Lake City under construction. The California Energy Conservation and Development Commission was processing its first application in the summer of 1976. In California, however, additional plants are being planned or designed, ranging from the 5200 megawatt San Joaquin nuclear plant to additional power sources being considered for the California Department of Water Resources. The statute creating the California Commission, moreover, "grandfathered" approximately 45 plants most of which presumably are being or will be built. Those California utilities which had been involved in the Kaiparowits Power Project will probably need to develop alternate power sources. In each of the other WINB states, however, only two or three siting decisions have been made in recent years or are pending. Thus siting decision making tends to be more of an individual, ad hoc process than a highly institutionalized, routinized system. The projected size of new plants and the presumed economies of scale in large plants would seem to suggest that siting decisions will in most states continue to be infrequent.

Two exceptions to this conclusion must be noted: first, siting of transmission lines will continue to be important and frequent, and second, if the high projections of power demand (e.g., approximately 7% growth per year) are in fact realized, the number of new power plants needed and their capacities will be tremendous. However, it does not seem that this extreme growth rate is likely. After two years of almost no growth in demand, preliminary data for 1976 indicates an annual growth rate of between 3% and 4%. This is the range of growth being assumed by the California Commission. If growth continues at this level (it could be lower), construction of new facilities would seem to be more manageable, and siting would not be of crisis dimensions in most of the eleven states. Of unknown significance is the energy policy of President-elect Carter. It has not yet been formulated, but campaign statements implied a slowing down of nuclear development, with increased emphasis upon synthetic fuel development.

Section 1. Missouri Basin Power Project (Wheatland)*

The Missouri Basin Power Project (MBPP) located near Wheatland, Wyoming, involves construction and operation of a 1500 megawatt coal-fired electric generating station and transmission system to serve base load power demand during the 1980's of six consumer-owned power distributors in the upper Missouri Basin Region. The plant will serve portions of Montana, Wyoming, and Colorado (in the WINB region) and North Dakota, South Dakota, and Nebraska to the East. The plant itself and its related reservoir are located in Southeast Wyoming near Wheatland, just north of Cheyenne. The projected cost of the plant is estimated at $1.1 billion; transmission facilities at $186.7 million.

The six participants in the project are members of the Missouri Basin Systems Group, a power planning and pooling association organized in 1963 with more than 100 noninvestor-owned members--rural electric cooperatives, municipal electric systems, and public power districts, as well as the U.S. Bureau of Reclamation. Regional power planning and pooling by the Missouri Basin System serves, and is paid for, by a large number of power suppliers in the region on a proportionate share basis. In addition, members of MBSG are responsible for the development and operation of coal-fired generating units at the Leland Olds Station near Stanton, North Dakota.

The six participants in the Missouri Basin Power Project are Basin Electric Power Cooperative, Heartland Consumers Power District, Lincoln Electric System, Missouri Basin Municipal Power Agency, Tri-State Generation and Transmission Association, and the Wyoming

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*The research and writing for this section was done by Ms. Louise Buck.

Municipal Power Agency. The following table indicates relative ownership shares, power allocation and investment of the six participants.

Ownership Shares, Power Allocation
and Investment in
Missouri Basin Power Project

Participant	Percent Ownership	Power Allocation (Mw)	Capital Investment Obligation (millions)
Basin Electric	42.27	634	$575,740
Tri-State	24.13	362	328,664
MBPPFC	16.47	247	224,330
LES	13.33	200	181,562
Heartland	2.80	42	38,138
WMPA	1.00	15	13,620
TOTAL	100.00	1500	$1,362,054

Source: Findings of Fact, Conclusions of Law, and order to issue Certificate of Public Convenience and Necessity to participants in the Missouri Basin Power Project, by Public Service Commission of Wyoming, June 24, 1976.

Importance of MBPP

The MBPP development is important to this study for several reasons. First, since Wyoming enacted a siting statute in March 1975, the Project had to go through the new siting process. It was, in fact the first industrial siting project to be handled by the Wyoming Industrial Siting Council (ISC). Second, the MBPP proposal is significant because it involved noninvestor-owned distributors. Third, the MBPP proposal is significant because of the amount of its planned capacity and because it has been designed to serve distributors in six states. Fourth, it is significant because MBPP bridges the service area of the Western Systems Coordinating Council (WSCC) and that of the Mid-Continent Area Reliability Council (MARCA). And this joint relationship was given some consideration in MBPP planning, although it was of slight importance in the approval process. Fifth, although the Wyoming Industrial Siting Council has sometimes been hailed as a "One-Stop" approval agency, in fact MBPP had to secure (by its own count) a total of 31 permits and/or certificates, the process extending over a period of more than three years.

Permit Items Needed for Construction
of the MBPP*

Permit and/or Certificate	Date of Application	Agency
1. Permit to Appropriate Surface Water (Grayrocks Reservoir)	4/24/73	Wyoming State Engineer
2. Permit to Appropriate Surface Water (Water Treatment Tests)		Wyoming State Engineer
3. Permit to Divert Water (Laramie River Pipeline)		Wyoming State Engineer
4. Permit to Appropriate Groundwater (Plant Site)		Wyoming State Engineer
5. National Pollutant Discharge Elimination System (NPDES) Discharge Permit	2/28/75 & 11/14/75	Wyoming Department of Environmental Quality - Division of Water Quality
6. Certificate of Public Convenience and Necessity	2/14/75	Wyoming Public Service Commission
7. Approval of final construction plans - Grayrocks Reservoir		Wyoming State Engineer

*This list, dated 8/6/76 and provided by MBPP, includes various Federal and State Permits, Certificates and other regulatory requirements that must be satisfied according to the Permit issued by the Wyoming Industrial Siting Council.

Permit and/or Certificate	Date of Application	Agency
8. Revision of Water Appropriation Permits for Boughton Ditch Water		Wyoming State Board of Control
9. Industrial Siting Permit	12/12/75	Wyoming Industrial Siting Council
10. Permit to Appropriate Groundwater (Johnson Wells) for Industrial Use		Wyoming State Engineer
11. Dredge and fill (404) Permit for Construction of Grayrocks Dam	9/19/75	U.S. Army Corps of Engineers
12. Revision of Water Appropriation Permits for Inundated Area	Amended Petition 5/19/76	Wyoming State Board of Control
13. Solid Waste Disposal Permit for Construction Waste Material	Preliminary 2/28/75	Wyoming Department of Environmental Quality
14. Solid Waste Disposal Permit for Industrial Wastes	2/28/75	Wyoming Department of Environmental Quality
15. Construction Permit Division of Air Quality	2/28/75	Wyoming Department of Environmental Quality
16. Operating Permit Division of Air Quality		Wyoming Department of Environmental Quality
17. National Environmental Policy Act Determination	Final review 5/3/76	USDA-REA
18. Aeronautical Permit for Chimney	5/6/76	Federal Aviation Administration
19. Permit to Construct Public Water Supply	4/30/76	Wyoming Department of Environmental Quality

Permit and/or Certificate	Date of Application	Agency
20. Petition Application for Transfer of Existing Plant Site Water Rights	3/15/75	Wyoming State Board of Control
21. a) Mining Permit to Excavate Dam Construction Material	4/9/76	Wyoming Department of Environmental Quality - Land Quality (DEQ)
b) License to Explore	4/9/76	
22. Highway Crossing Permits for Transmission Lines		Wyoming Highway Department
23. Spill Prevention Control and Counter Measure Plan (SPCC Plan)		US EPA & Wyoming Department of Environmental Quality--Water Quality
24. Approval of Bottom Ash Pond	Preliminary information submitted 4/30/76	Wyoming Department of Environmental Quality--Water Quality
25. Permit to Construct Reservoir for On-Site Raw Water Storage		Wyoming State Engineer
26. Permit to Construct Reservoir for Storm Water Runoff	4/16/76	Wyoming State Engineer
27. Right-of-Way Approval of lands inundated by Grayrocks Reservoir	4/76	US Department of Interior - BLM
28. Transfer of Federal Mineral Leases - Grayrocks Reservoir	Letter 3/18/76	US Department of Interior - BLM
29. Construction Permit for Waste Water Treatment System	4/30/76	Wyoming DEQ

Permit and/or Certificate	Date of Application	Agency
30. Construction Water Supply	6/7/76	State Engineer
31. Construction Permit --Air Quality		US-EPA

Finally, the MBPP experience suggests that reforms and improvements may be in order including provision for more effective public or governmental consideration of regional factors. It is expected that the Wyoming Legislature will consider amending the Siting Act in 1977 and developments there will merit attention.

Evaluation of MBPP

Groundbreaking ceremonies were held on the site at Wheatland, Wyoming on August 20, 1976. It is expected that the first of three 500 megawatt (net) units will begin generating power by early 1980, with a second and a third unit coming on line by mid-1980 and mid-1983 respectively. The location and size of the Wheatland plant reflect conclusions by its sponsors that economies of scale, associated with large base load generating units and system power sharing will add to the reliability and efficiency of the system.

Planning for the Laramie River Station at Wheatland began in 1972 when formal consideration by MBSG members was given to future power requirements based upon forecasts of increasing consumer demand within the region.

At that time an organizational planning structure was established for the purpose of systematically investigating alternative power supply options. And in early 1973, a study was commissioned by the MBSG to investigate various combinations of fuel and water supplies and site locations throughout the Missouri Basin Region. By mid-1973, a preliminary report indicated that locations giving promise of greatest economy lay along the coal deposits in Eastern Wyoming at points where suitable water supplies and rail transporation might be obtained. Based on this study in 1973, an exploration of water supply possibilities was begun to determine the feasibility of obtaining necessary water at various locations in Eastern Wyoming. Then in June, 1974, a siting feasibility study was commissioned to examine economic factors of operation and resource availability (primarily coal and water). This study led to selection of the specific site. The report also made recommendations for the optimum size of the plant.

After the site in Platte County Wyoming near the city of Wheatland was selected as the most promising area to build the plant, an environmental study was commissioned to determine the nature and extent of environmental impacts.

Once the site and size of the generation plant had been set and determination as to which power suppliers within the Missouri Basin region would participate in the Project had been made, the principle task became that of acquiring the necessary permits and licences, and providing for the financing, construction, and operation of the plant and associated transmission facilities. At that time, the principle permits required in Wyoming were a Certificate of Public Convenience and Necessity from the Wyoming Public Service Commission, a NPDES permit from the Water Quality Division of Wyoming's Department of Environmental Quality (DEQ), a Solid Waste Disposal Permit, and Construction and Operating Permits from the DEQ, and a Dredge and Fill Permit from the U.S. Army Corps. of Engineers for construction of an off-site reservoir. Various water appropriation permits were also required from the Wyoming State Engineer and the Wyoming State Board of Control. In addition, the National Environmental Policy Act required preparation of an Environmental Impact Statement by the Rural Electric Administration, since that federal agency was involved in underwriting the financing of the project. A number of minor permits will also be required before plant operation may commence. (See previous list.)

Wyoming Industrial Siting Act

In March, 1975, the Wyoming legislature passed the Wyoming Industrial Siting Act which applied to any energy generating or conversion plant designed for, or capable of generating 100 megawatts of electricity or more. To comply with the Act, operators had to secure a permit from the Industrial Siting Council before commencing construction. The criteria for the permit application went beyond those factors which the project planners had considered in previously commissioned environmental analyses, particularly in the area of socio-economic impacts. Thus it became necessary for the sponsors of the Wheatland plant to undertake additional studies to comply with the new requirements of the Wyoming Industrial Siting Act.

Under the provisions of the Siting Act permit review proceeds in two stages. The first stage requires applicants to present a full description of the proposed activity and all associated impacts at a kind of reconnaissance level. Upon a showing that no serious impacts will result, or that adverse impacts will be ameliorated, the Council is authorized to issue a permit to construct the proposed facility, with or without conditions, with the period for Council deliberation not to exceed 60 days. But if the Council finds that serious impacts will result from the proposed project, it may order the applicant to proceed to the second stage involving more detailed investigation of the impacts and formulation of mitigation plans. At both stages, inputs from other state agencies and from the public are secured. Review of second stage submittals is not to exceed 180 days.

Consideration of the MBPP Application

In the Wheatland case the earlier siting feasibility study had concluded that it was essential for the proposed project to begin on schedule in order that projected energy demands of the participants could be met. The introduction of the Industrial Siting Act requirements into the applicant's plans introduced unanticipated delays in the project schedule and was regarded as threatening to increase construction costs. Thus, it seemed prudent to try to acquire a permit from the Industrial Siting Council at the first stage of the review process to avoid the additional delay if the process went to the second stage. Project directors thus indicated to the Siting Council a willingness to accept any reasonable conditions to the permit in order to avoid second stage proceedings.

Hearings

Public hearings are required for the acquisition of permits from the Industrial Siting Council. The Public Service Commission also must hold hearings before issuing a Certificate of Convenience and Necessity. And the Army Corps of Engineers holds hearings for Dredge and Fill permits. The Department of Environmental Quality issues air and water quality permits and may hold hearings in this connection. The I.S.C. and P.S.C. hearing proceedings became contested cases when certain groups intervened and were recognized as parties to the proceedings. The P.S.C. hearings lasted approximately two weeks in December 1975, and the I.S.C. hearings proceeded for approximately the same length of time in February and March of 1976.

Many issues were raised during each of these hearings, but several are of particular importance to regional power plant siting and associated problems.

During the PSC hearings, an early and fundamental issue was that of PSC jurisdiction over the proposed plant and over the Project participants, several of whom do not currently operate facilities or sell power in the State of Wyoming. Since it is the duty of the PSC to regulate the rates of power sold in Wyoming, the PSC concluded that it did indeed have jurisdiction over the participants because they are united under the terms of the Participation Agreement. It is recognized by the PSC, however, that the jurisdictional issue may be tested in courts.*

A second issue relating to the regional nature of the Project, addressed in the PSC hearings, concerned projections of power demand in Wyoming and in the other states to which the MBPP power was destined.

Ultimately in April, 1976, the Industrial Siting Council issued a permit for MBPP, attaching certain conditions, but without requiring the second stage review process. The conditions dealt primarily with local impact monitoring and mitigation.

The Public Service Commission issued a permit to the applicants in June, 1976, with conditions as to development of the transmission system, and requiring MBPP to keep the PSC informed on progress in acquiring other permits, licences, and contracts. The PSC was uncertain as to when in the applicant's planning process a PSC permit should be awarded, i.e., before or after the issuance of all other permits, and hence attached the reporting conditions.

MBPP Impact Mitigation Programs and Contracts

The Missouri Basin Power Project management demonstrated an awareness of the importance of developing a viable socio-economic impact assessment and mitigation program at a fairly early stage in site/offsite planning. In June 1973, MBPP began holding small public meetings with local officials in the Wheatland area concerning their development plans and the effects that these might have on the local economy and its infrastructure. Within a few months, broadened participation was sought and the growing group was divided into task forces each of which began dealing with such specific problems as housing, schools, roads, social services and health services. The general purpose of the task forces was to serve as a forum for testing of ideas in anticipation of future public policy proposals designed to mitigate local impacts.

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*A different kind of legal challenge was filed against the project by the Nebraska Justice Department on November 24, 1976, aimed at blocking REA action supporting the project alleging that the project would reduce Nebraska's share of Platte River water.

The nature and extent of the specific impact mitigation plans that have been developed through the impact amelioration task forces were undoubtedly strongly influenced by the Industrial Siting Act requirment that there be no threat of serious injury to local communities as a result of the siting of an industrial facility. It was particularly important to the applicant that this requirement be met as a prerequisite to the stage I review process in order to avoid second stage preceedings. Thus, by early 1976 several specific impact mitigation contracts between MBPP and public entities had been or were being negotiated. The major thrust of these agreements is to resolve classic "boom town" problems regarding tax lead time and jurisdictional incongruities through some form of front end financing directly or indirectly through industry guaranteed state loans.

As of August 1976, MBPP had entered into various agreements to deal with particular impact problems.

1. County Roads between Wheatland and the Plant-- MBPP had agreed to finance 100% of the cost of construction improvements with the condition that the county attempt to secure a Coal Tax Revenue Grant from the Wyoming Farm Loan Board from which the county would reimburse the project for road improvements. If the grant could not be obtained, the project would assume responsibility for all costs.

2. Southeast Wyoming Mental Health Center--The Project has agreed to pay the Mental Health Center (MHC) $20,000 per year for the first three years during construction, and the MHC has agreed to provide services for the construction population. The county will attempt to secure grants to finance their expanded service program and thereby reimburse the project.

3. Human Services Team--The Project has agreed to fund a Human Services Team (a public health nurse, a youth services coordinator, a mental health service specialist, a parks and recreation specialist, and a local government administrative specialist) up to $63,000 per year for a period of three years with the understanding that Platte County will attempt to secure public funds for the second and third years.

4. Public Education--Platte County School District #1.--The Project has agreed to help the school district obtain "front-end" financing for the planning and construction of a new primary school.

5. Platte County Joint Planning Office--The Project has agreed to assist local planning efforts by making financial contributions in

the amount of $6,000; $8,000; and $10,000 respectively for three consecutive years to fund a county planning commission staff.

6. Sewer and Water Utilities--The Project will guarantee loans from the Wyoming Farm Loan Board to the Joint Powers Board of Wheatland and Guernsey to provide for front-end financing of sewer and water utilities.

7. Housing--The Project is planning and developing its own housing project designed to accomodate the needs of construction workers expected to live in the Wheatland area. The project housing development will accomodate trailers until the construction force leaves, at which time the trailers will be removed and the lots will be paired and used for single family dwelling sites.

According to the project manager, the project had committed between $15-18 million for impact mitigation by June 1976. Under the conditions of the Industrial Siting Permit, the Project is also responsible for the development of an Impact Monitoring Program for the purpose of anticipating and responding to changes in the coal situation as construction proceeds.

Subsequent Developments

As ground is being prepared for construction of the Laramie River Station near Wheatland, many issues raised during the hearings remain unresolved. Litigation involving the validity of the Industrial Siting Council's decision to issue a siting permit without proceeding to second stage deliberations and challenging the Council's action has been begun. Other court action is possible, e.g., Nebraska officials are considering a suit involving that state's water rights under the Platte River Compact. All permits have not yet been acquired. Because the REA will not approve financing arrangements until all necessary permits have been obtained, the project participants have applied for and received short-term loans from the St. Paul Bank for Cooperatives in St. Paul, Minnesota in the amount of $20 million for initial project construction operations.

The scale of the operation of the Missouri Basin Power Project is consistent with a growing trend towards the establishment of giant power generation facilities optimally located to achieve maximum economic advantage and system reliability. Even then, however, inflation, costs of environmental control features, and other required design features result in power production cost estimates of 31.56 mills per KWH.

Power plant planning seeking to achieve maximum economies of scale and most efficient locations for a particular project exacts other types of economic and social costs and can raise fundamental legal questions concerning jurisdiction over costs, rates, and impacts which state agencies may not be fully equipped to consider or decide. The issues that have been raised during the Missouri Basin Power Project siting process concerning public vs. private responsibility for impact mitigation, the size and location of facilities to meet estimated power requirements, by whom such questions should be determined, the prudence and legality of water and land resource decisions, and the appropriate timing for the various regulatory authorizations have left unresolved questions in the minds of most of the actors and decision makers who have participated in the Wheatland plant approval process. Clearly, these basic issues are common to many other energy facility siting projects. And because of the concern of the Governor and the Legislature efforts will probably be made to improve the system.

It appears that the enactment of a state energy facility siting procedure such as the Wyoming Industrial Siting Act, although it goes a long way towards establishing a forum for consideration of many of the new issues, does not in itself provide all of the necessary legal and institutional mechanisms for resolution of those issues due, among other things, to the extra-state, or regional nature of the problems involved.

Section 2. The Yampa Project

The Yampa Project near Craig, Colorado, is being constructed by a consortium of noninvestor-owned utilities. It will consist of two coal-fired 408 megawatt units, one to go on line in 1978 and the other in 1979. Two additional units are being planned for later construction.

From a regional point of view, the Yampa Project is significant for several reasons. First, as indicated, it is being constructed by a consortium of four noninvestor-owned utilities serving consumers in Colorado, Nebraska, Wyoming, and Arizona. Second, the development of the Yampa Project, in order to serve Arizona consumers involves an exchange agreement for wheeling power from Northern Colorado to the Southern portion of Arizona. Third, in terms of the siting process, the Yampa Project illustrates the situation where no siting laws are in effect. Colorado had no siting statue (it still does not have one) at the time when construction on the Yampa Project was begun. Thus the siting procedures were more-or-less typical of the situation when little explicit state interest had been indicated with respect to siting. State concerns were expressed in terms of standard Public Utility Commission control, and in terms of water and air pollution controls.* In general, however, decisions with respect to the Yampa Project resulted from private negotiations and, ultimately, contracts among the participating utilities.

The Yampa Project is located near the town of Craig in Moffat County, Colorado, in the northwest corner of the state. The Project is an integrated system of electrical facilities--the plant itself, a coal mine, a water storage reservoir, and related transmission lines. As of January 1975, the cost of the Project was set at approximately 500 million dollars. Since then requirements set by the Colorado Air Pollution Control Commission have resulted in a reported increase in costs of over 100 million dollars. Since the Yampa Project involves federal action significantly affecting the environment, a detailed environmental impact statement was prepared pursuant to the National Environmental Policy Act. The following description is based, to a substantial degree, on information contained in that impact statement.

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*For technical reasons, the Colorado Constitution had to be amended to allow one of the four participants to enter into the joint arrangement.

The Participants

The four utilities involved in the construction of the Yampa Project are: 1) the Arizona Salt River Project Agricultural Improvement and Power District (hereafter referred to as Salt River); 2) the Colorado-Ute Electric Association Inc.; 3) Tri-State Generation and Transmission Association Inc.*; and 4) the Platte River Power Authority. The interests of these four are distributed as follows: Salt River--29%; Colorado-Ute Electric Association--29%; Tri-State Generation and Transmission Association--24%; and Platte River--18%.

All but Salt River are federations of distribution organizations. Colorado-Ute, based in Montrose, Colorado, is a non-profit corporation organized under laws of the State of Colorado serving 13 member rural electric cooperatives, nine of which distribute power in western Colorado, one in the San Luis Valley and three in the Arkansas River Valley. Colorado-Ute and its 13 members are regulated by the Colorado Public Utilities Commission. Tri-State Generation and Transmission Association, based in Denver, is an association of 26 rural electric cooperatives distributing power in Colorado, Nebraska, and Wyoming. Tri-State presently purchases power from the U.S. Bureau of Reclamation and from Basin Electric Power Cooperatives headquartered in Bismarck, North Dakota.

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*This organization is also involved in the construction of the Wheatland power plant discussed separately in this report.

Platte River Power Association, serving the four Colorado cities of Fort Collins, Loveland, Longmont, and Estes Park, has been incorporated as a non-profit quasi-governmental corporation under Colorado statutes.* Platte River presently receives its power from the Bureau of Reclamation. Colorado-Ute and Tri-State financing of the Yampa Project will in part be underwritten by the Rural Electrification Administration. Platte River will finance its share through the sale of revenue bonds supported by contracts with its participating distributors. Salt River is a political subdivision of the state of Arizona providing both water and electricity in the Phoenix area. Its share of the Project is being financed through revenue bonds. Since Salt River serves a large area in the southern part of Arizona, power from the Project will be wheeled by the Bureau of Reclamation under a complex set of agreements.

Because of the complexity of the Project, several Colorado state agencies have been involved in reviewing parts of the Project (see below). Water is to be pumped from the Yampa River. To provide the necessary supply, a reservoir is being constructed on Elkhead Creek, a tributary of the Yampa. This reservoir is being developed in cooperation with the Colorado Department of Natural Resources, Division of Wildlife which had previously designed a smaller capacity reservoir at the same site. By increasing its size, water storage will be provided for both the Division of Wildlife and for the Yampa Project. The primary purpose of the reservoir, insofar as the Yampa Project is concerned, is to provide reserve water for low flow periods in the river proper. As is the case with all reservoirs in the state, this one was approved by the Colorado Office of the State Engineer.

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*The Constitutional amendment referred to above and enacted in 1974 permitted the Platte River Association to participate in the Yampa Project. It's status has thus been elevated to that of a political subdivision of the state of Colorado, a governmental entity distinct from its four member cities.

Both air and water pollution controls established by the state will be applied to the plant. As indicated above, while this study was underway, air pollution control standards were increased, requiring a reported additional expenditure by the sponsors of over 100 million dollars.

The coal mine serving the Project under contract will be a surface mining operation owned and operated by Utah International Inc. Coal will be trucked to the plant, and mining will be subject to Colorado strip mine statutes and regulations.

Existing transmission lines will, of course, be utilized to the fullest extent possible. But at least six additional lines will be constructed to serve the participants and to stabilize regional power flow, some connecting existing lines at locations remote from the Project.

The Decision Process

It is apparent from the history of the Yampa Project that in a state like Colorado where no siting statutes are in affect, the development of the Project proceeded largely on the basis of independent, private negotiations--governmental involvement occurring only at such points where existing state law required approvals. In this situation, the initiative lay entirely with the sponsors, and issues were presented to a variety of state agencies not in terms of a comprehensive plan but in terms of specific and fragmented issues.

Discussion on joint development of what became the Yampa Project began in late 1969 when Colorado-Ute, the Public Service Company of Colorado, and Salt River managers, recognizing the economy of large project construction, projected their power needs into the next decade and began to consider possible collaboration and to explore possible sites. Colorado-Ute and Salt River were already partners in the Hayden generating station located in northwestern Colorado, about 30 miles east of Craig. In this case, also, the Salt River share of power is wheeled to its service area under agreements with the Bureau of Reclamation.

In 1970 Platte River Power Association and Arizona Public Service Company joined in the consideration of a joint project, the location of which had not yet been determined. In this early period, when no specific site had been choosen, a variety of committees, involving several more utilities than those ultimately sponsoring the Yampa Project, conducted numerous technical studies on many design and operating aspects of the proposed joint project. The participants also hired Sterns-Rogers Inc. and other independent consultants for preliminary engineering and environmental investigations. As a result, 13 alternate sites were finally identified. The process of analyzing technical problems and alternatives continued during this initial period, and ultimately a number of the participants withdrew from further participation. Then in September 1971 the present four organizations agreed to proceed with the Project which became designated the Yampa Project.

The Environmental Impact Statement provides in considerably more detail the account of the negotiations and analyses which preceded selection of the Yampa Project site. The point to emphasize is that this activity went on with virtually no state government input as to location. It was entirely a matter of private investigation, negotiation, and discussion. This is typical of situations where no siting statutes are in effect.

In June 1974 the Public Utilities Commission approved the Yampa Project and construction began on September 14, 1974.*

Clearances and Approvals

While the planning of the Yampa Project was essentially private in nature, a variety of contacts with state and federal agencies were required. These contacts, however, were not in the framework of siting control and related to no comprehensive state or federal energy program or policy. Instead, reviews reflected the fragmented interests of state and federal agencies. This is suggested in the following list of agencies contacted:

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*The only objection to the Yampa Project concerned the location of a 230 KV transmission line between Loveland and Longmont. A citizen's group, the Platte River Protection Association, sought to have the transmission line moved from farmland to existing publicly owned right-of-way. Several meetings were held during February, March, and April of 1975. At the time of writing negotiations are still continuing and a solution has not been reached. Re-routing of the planned power line is estimated to cost an additional one million dollars.

1. State of Colorado--Authority to purchase surface rights, and to conclude lease arrangements for mineral rights for the plant site and river intake structure site; also to obtain rights-of-way on which to construct the pipeline carrying water from the river intake structure to the plant site and for transmission line routing across state lands.

2. Colorado Department of Natural Resources--Contractual arrangements for the construction of a joint-use reservoir; a permit to mine and approval of reclamation plans.

3. Colorado Department of Health--Permits to construct the Project from the Air Pollution Control Commission and the Water Pollution Control Commission.

4. Colorado Public Utilities Commission--A Certificate of Convenience and Necessity, and approval for the issuance of securities.

5. U.S. Department of the Interior, Bureau of Land Management--Rights-of-way licenses for transmission lines across federal public lands; approval of mining and reclamation plans affecting the public domain.

6. U.S. Department of the Interior, Geological Survey--Approval of mining and reclamation plans as related to the public domain.

7. U.S. Department of the Interior, Bureau of Reclamation--Cooperation and contractual arrangements for coordination of regional transmission planning and wheeling of power to Arizona.

8. U.S. Department of Agriculture, Forest Service--Approval of permits for transmission line routing across National Forest lands.

9. U.S. Department of Agriculture, Rural Electrification Administration--Approval of certain financing arrangements.

10. U.S. Department of Transportation, Federal Aviation Administration--Filing Notice of Proposed Construction or Alteration for the two stacks at Craig Station and for transmission line structures.

11. U.S. Environmental Protection Agency--Determination of requirement for permit for storm runoff.

12. U.S. Department of the Interior, Bureau of Outdoor Recreation--Approval for raising the dam height and water level of Elkhead Creek Reservoir.

Section 3. San Joaquin Nuclear Project*

Although planning for this project began in 1972, approval procedures have not nearly been completed. If no major administrative obstacles are encountered, and no legal challenges filed, the first unit of the plant is expected to be on line in 1985 or 1986. Its inclusion in this chapter seems appropriate, despite various uncertainties, because of its very large planned capacity and because it is a joint venture by nine utilities.

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*Most of the information in this section comes from interviews and from the four volume Draft Environmental Impact Report--Revised (May 31, 1975).

San Joaquin Nuclear Project
Participants

Participant	Percent Ownership
Department of Water & Power City of Los Angeles (DWP)*	35.5
Pacific Gas and Electric Co. (PG & E)	23.0
Southern California Edison Co. (SCE)	22.0
State of California Department of Water Resources (DWR)	10.0
Cities of Anaheim, Glendale, Riverside (2% each)	6.0
Northern California Power Agency (NCPA)	2.0
City of Pasadena	1.5
TOTAL	100.0

Background Information

The San Joaquin Nuclear Project (SJNP) is located in the southern part of the San Joaquin Valley in Kern County, California, approximately 10 miles west of the city of Wasco and 33 miles northwest of Bakersfield. It is to be built on a tract of about 300 acres. Its planned capacity when completed will be 5200 megawatts. Unit 1 is scheduled to come on line in 1985; unit 2 in 1986; unit 3 in 1988; and unit 4 in 1989.

The participants, collectively, serve 90 percent of California's electrical needs, and operate almost 50 major generating plants with peak demands (DWP, PG & E, SCE) in 1976 estimated at 29,399 megawatts. The three major participants (DWP, PG & E, SCE) are planning additional facilities to 1990 with total capacities in excess of 25,000 megawatts at over 60 sites. Thus plans are approximately to double their capacities in fifteen years--a growth rate of about 5% per year.

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*DWP is Project Manager and will operate the completed facility.

In discussing "Electric Load forecasting" (1.1.2.1), the Environmental Impact Report indicates that each utility has been responsible for its own forecasts, pointing out, however, that the methods used consist basically of two techniques--extrapolation and regression analysis. In planning capacity to be installed, the participants estimated peak demand as well as energy load growth to which were added estimates of required reserve margins. These were then combined in composite figures. The following table presents an overview of the situation as calculated by the participants.

Reserve Margin With and Without
San Joaquin Nuclear Project

(megawatts)

Year	Peak Demand	Total Capability	Reserve Margin	Percent Reserve
With SJNP				
1986	47,104	55,839	8,735	18.5
1988	51,554	61,186	9,632	18.7
1990	56,522	67,385	10,863	19.2
Without SJNP				
1986	47,104	54,539	7,435	15.8
1988	51,554	58,586	7,032	13.6
1990	56,522	62,185	5,663	10.0

Source: Table 1.1.2-6, Draft Environmental Impact Report, Revised, p. 1.1-9.

Three points should be noted: first, no account is taken of the possible significance for the participants of their membership in WSCC, although detailed data is included on quantities of purchased power as part of total capability; second, although there is not full agreement in the technical literature, a reserve margin of 20% seems to be considered in the range of reasonable reliability; and third, planning of load growth remains an individual utility responsibility (i.e., planning is not centralized even among these California participants).

The most explicit discussion of regional factors in the Environmental Impact Report occurs in connection with the discussion of "Purchase of Capacity and Energy" (6.1.2.1.1) where it is concluded that "It is unlikely that there would be sufficient capacity and energy available for purchase for either the electric utilities or DWR." The Report explains:

> "Some of the Participants are already purchasing power through their involvement in other power generation projects outside California . . . . A number of these regional projects are scheduled for operation in the early and mid-1980s and will help provide the capacity and energy to meet the needs of the Participants. The additional capacity and energy from these out-of-state projects, however, has been allocated . . . ."

Speaking of energy from the Pacific Northwest the Report concludes:

> "This energy cannot be considered a firm energy resource because its availability depends on precipitation and prior need for the energy in the Pacific Northwest."

The Report also concludes:

> "The direct purchase of energy from non-neighboring regions is not practical because of the increased power losses in the long distance power transmission lines, the limited existing transmission line capacity and transmission facilities, and the increased vulnerability to outage over the long distance transmission lines."

As suggested in Chapter I of our report, this statement would seem to deny the rationale for Bureau of Reclamation interconnections and for the WSCC system itself!*

Finally, the Environmental Impact Report states: "At present, there are no known utilities in the western United States from which the Participants could expect to purchase directly large quantities of intermediate or base-load energy of the same magnitude as SJNP . . . ." In this connection it might be noted that at present, California has no coal-fired plants. Nor does it have coal resources. Yet the plans briefly summarized above for capacity increases to 1990 include construction of some coal-fired plants which will presumably depend upon "imported" coal. And from other sources it is known that the California Department of Water Resources has contracted (with Professor Orson Anderson of UCLA) for an analysis of alternate coal sources and alternate sites for coal-fired generating stations to help meet its water pumping requirements for the California Water Project. This analysis is due in December 1976.

Project Approvals

SJNP must run the gamut of federal and state (California) approvals. In this connection the Environmental Impact Report included the following "Milestone Schedule." That schedule contains only a partial list, however, for a variety of reasons, one being that the applicability of various state laws to a municipal agency is in dispute. Moreover, while the Warren-Alquist Act establishing the Energy Resources Conservation and Development Commission "grandfathered" a 1300 megawatt nuclear San Joaquin Facility, it is now argued that the presently proposed 5200 megawatt plant is a different plant and does not benefit from the exemption. In any case, the process and scope of approvals in California is discussed more fully in Chapter II.

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*It should be noted that Albert Tsao, Director of the Energy Planning Division, Montana Department of Natural Resources and Conservation, indicated in conservation that during hearings for Colstrip units three and four information was provided by engineering consultants which suggested the new units were not needed to improve the reliability and efficiency of the electrical distribution system beyond Montana.

San Joaquin Nuclear Project
Milestone Schedule

Table 1.1.2-2 Rev. 5-76

EVENT	DATE
Submit Early Site Review Report (ESRR) to Atomic Energy Commission (AEC)	2/74
Issue Feasibility Study Report	8/74
DWP Files California Draft Environmental Impact Report (DEIR)	4/75
Submit Antitrust Report to Nuclear regulatory Commission (NRC)	5/75
Start of Public Hearing Period on DEIR	6/75
DWP Certifies California Final Environmental Impact Report (FEIR)	11/76
Notice of Determination Filed on FEIR	12/76
DWP Executes Participation Agreement	12/76
File for Kern County Conditional Use Permit	12/76
Kern County Public Hearing Period	1/77 to 3/77
Receive Kern County Conditional Use Permit	6/77
Submit Application for Construction Permit to NRC	12/77
Submit Environmental Report (ER) to NRC	12/77
Submit Preliminary Safety Analysis Report (PSAR)	2/78
NRC Issues Draft Environmental Statement (DES)	4/78
Comments due on DES	6/78
NRC Issues Final Environmental Statement (FES)	7/78
NRC Public Hearing Period	7/78 to 11/78
Atomic Safety and Licensing Board (ASLB) Rules on FES	11/78
Receive Limited Work Authority (LWA)	1/79
Receive Construction Permit	10/79
Commercial Operation Unit 1	4/85
Firm Power Unit 1	12/85
Commercial Operation Unit 2	10/86
Firm Power Unit 2	6/87
Commercial Operation Unit 3	4/88
Firm Power Unit 3	12/88
Commercial Operation Unit 4	10/89
Firm Power Unit 4	6/90

Costs of Delay

The general proposition that delays in approval processes may result in increased costs needs little proof. Just what those costs are, however, is very difficult to prove. In any case, in April 1976 a staff member of the Los Angeles Department of Water and Power prepared the following statement relating to costs incurred due to the California Environmental Policy Act. Whether the estimates are valid is probably not so important as is the degree to which the statement reflects the Department's views on the subject. It should be noted, moreover, that other delays are being encountered resulting from the involvement of other state and federal agencies. And as of the date of this study (summer 1976) citizen groups remained to be heard from!

SAN JOAQUIN NUCLEAR PROJECT, SCHEDULING DELAYS, AND THE COST OF SCHEDULING DELAYS, CAUSED BY THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (4/12/76)

Delays to Date -- A total of 34 months.

Increase in Capital Costs of Generating Facilities (as constructed costs) -- Approximately $1.5 billion. An increase of 34 percent over original estimates.

Total Fuel Differential Costs (in 1975 dollars) -- The ultimate cost differential of using oil for electrical generation rather than nuclear fuel for the 34 months of schedule delay is approximately $1.3 billion plus the consumption of approximately 127 million barrels of oil that could be used for other purposes.

Annual Fuel Differential Costs -- Approximately $455 million, and the consumption of 44.8 million barrels of oil.

Monthly Fuel Differential Costs -- Approximately $37.9 million, and the consumption of 3.7 million barrels of oil.

Note: The "Calculations" which were also included in the statement have been omitted.

Section 4. Pebble Springs Nuclear Project

After reviewing the research done by state agencies, and holding public hearings, the Nuclear and Thermal Energy Council (NTEC) of Oregon (since renamed the Energy Facility Siting Council) ruled favorably upon the site certificate application of Portland General Electric company (PG&E) for construction of two 1,260 megawatt nuclear power reactors to be located near Arlington, Oregon. Collectively, the twin reactors are called the Pebble Springs Nuclear Power Plant. The NTEC recommended approval of the application to the Governor of Oregon subject to certain terms and conditions of the site certificate being met by the company. This action was taken on April 11, 1975.

Subsequently, two citizens, Lloyd K. Marbet and Harold C. Christiansen petitioned for judicial review of the NTEC's order recommending approval to the Governor. Petitioners Marbet and Christiansen sought to have the order reversed on several grounds -- that the NTEC did not properly assess the danger to public health associated with radioactive waste management and disposal; that the NTEC did not establish findings of fact regarding PG&E's financial and operational ability to construct and operate the nuclear units; that the NTEC erred in not accepting petitioner Christiansen's views on alternative sources of energy; and the petitioners argued that PG&E did not show "need for power" warranting the construction of the twin nuclear units.

Petitioners failed to have the NTEC's order reversed, for on June 1, 1976 the Court of Appeals of the State of Oregon entered its opinion that the Nuclear and Thermal Energy Council carried out its statutory responsibilities when it issued a site certificate for the Pebble Springs nuclear units, and thus affirmed the Council's order.

However, during the time petitioners were fruitlessly pursuing their arguments regarding the conduct of the NTEC, an event occurred which would cause the whole matter to be considered for remand to the successor agency of the NTEC -- the Energy Facility Siting Council. On January 23, 1976, the day of oral argument before the Court of Appeals, Portland General Electric signed a contract with Puget Sound Power and Light Company, Pacific Power and Light, and the Washington Water Power and Light Company, which redistributed the ownership and construction schedules of four nuclear power units previously controlled by Portland General Electric and Puget Sound Power and Light. Two of these units were proposed for the Pebble Springs site. On February 11, 1976 Marbet and Christiansen petitioned the Court to remand the Pebble Springs matter back to the Energy Facility Siting Council for review on the grounds that the signing of the cited contract constituted a significant change in the circumstances of the plant. On March 12, 1976 the Energy Facility Siting Council made a separate but similar motion for remand which reflected the unanimous view of the Council membership.

In its motion for remand, the Council argued that the changed ownership of the Pebble Springs units required reexamination of the following points which are among its statuatory responsibilities:

(1)---Need for power; (2)---Plant economics; (3)---Financial ability; (4)---Operational ability. The Council further argued that reexamination of the above four points then called for the reexamination of "certain issues inherent in nuclear plants and the nuclear fuel cycle." These issues were defined by the Council to include: (a) methods and arrangements and the site for disposal of radioactive wastes generated by the Pebble Springs plant; (b) provisions for the storage of irradiated fuel elements removed under either normal or emergency conditions; (c) the capability and reliability of the Emergency Core Cooling System proposed for the Pebble Springs units; (d) availability and price of uranium fuel for the lifetime of the units; (e) facilities to reprocess spent fuel from the units; (f) procedures and methods for safeguarding special nuclear materials associated with the Pebble Springs units.

The justification for including the above matters in the request for remand was that the Council is required by law to balance off the need for the project against the potential risks it poses to the public health, safety, and welfare. Further, in the original siting certification the Council had accepted some general statements about how the above matters would be resolved, and thus seemingly used the change in ownership as an opportunity to seek more specific answers to certain problems from the applicant.

The question of remand is now (November 10, 1976) before the Supreme Court of the State of Oregon.

The significance of the Pebble Springs case is that the Energy Facility Siting Council recognized that changed ownership of energy production facilities could possibly alter the justification given by the utility for meeting its "need for power" forecasts.

Chapter IV. REGIONAL INTERCONNECTIONS -- THE WESTERN SYSTEMS COORDINATING COUNCIL, REGIONAL RELIABILITY, ECONOMY AND EFFICIENCY*

The Western Systems Coordinating Council (WSCC) is a voluntary association of electric power utilities which provide substantially all electric service to the eleven western states of the contiguous United States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming), as well as to parts of Nebraska, South Dakota, Texas, and British Columbia, Canada.[1] It was formed March 20, 1967,[2] and the WSCC Agreement became effective August 4, 1967. The stated purpose of the WSCC is to promote reliable operation of the interconnected bulk power systems in the western region through coordinated planning and operation.[3] This was to be accomplished through exchange of information between the various member utilities with respect to day-to-day operations as well as through sharing plans for meeting projected local energy demands for the ensuing five years, permitting each utility to study the impact of these plans on each other's local systems and on the interconnected regional system, and to develop plans for the more efficient interconnection of existing and new facilities in the region.[4]

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*The principal investigators take full responsibility for this chapter. At the same time they wish to acknowledge the creative initiative of Michael Hamilton who served as a Graduate Research Assistant in preparing this chapter and wrote most of the text for it.

The WSCC service area is characterized by extreme variation in population densities, from large metropolitan centers to barren desert, accompanied by extremes in electrical load densities. At the same time, population aggregates are widely scattered with long distances between load centers and power generating sources.

Prior to the organization of WSCC a variety of contractual relationships between individual bulk power producers had been developed. In addition, so-called "power pools" had been established by group agreements in the four natural subregions within the WSCC area. These subregions reflect concentrations of natural resources as well as historic social, political, and economic influences which contribute to the corresponding geographical population and industrial growth patterns. These subregional groupings, still important in the operation of the WSCC system, are the Northwest Power Pool (Washington, Oregon, Utah, Idaho, Montana), Rocky Mountain Power Area (roughly Colorado, Wyoming and parts of western South Dakota and Nebraska), New Mexico Power Pool (New Mexico and parts of western Texas, primarily El Paso), and the Pacific Southwest Power Area (California, Nevada, Arizona), which is further subdivided into four areas.[5]

The Western Systems Coordinating Council is one of nine regional reliability councils which make up the National Electric Reliability Council (NERC). The WSCC is the largest of these in area, covering nearly 1.6 million square miles, representing more than one-half of the land area of the "lower forty-eight States," and serving a population of approximately 38 million. It is the second largest of the councils in generating resources and in peak load.[6]

The six largest utilities in the WSCC, in terms of megawatt generating capacity, are:[7]

Pacific Gas and Electric
Southern California Edison
U. S. Corps of Engineers
Arizona Public Service
Bonneville Power Administration
Los Angeles Department of Water and Power

Membership in the WSCC is open to all bulk power suppliers, and through affiliate membership, to all operating power systems in the WSCC service area. Full members pay membership dues on a sliding scale, based on their actual yearly total power generation as reported to the Federal Power Commission. Affiliate members pay dues of a nominal flat fee per year, as these are generally utilities with no significant generating capacity of their own who are engaged primarily in local distribution of electricity. All have access to the benefits of the interconnected system. As of October, 1976, the WSCC consisted of 46 Member Systems and 13 Affiliate Members as listed below.[8]

WESTERN SYSTEMS COORDINATING COUNCIL

MEMBER SYSTEMS (46)

APEC - - - Arizona Electric Power Cooperative, Inc.
APA - - - Arizona Power Authority
APS - - - Arizona Public Service Company
BHPL - - - Black Hills Power & Light Company
BPA - - - Bonneville Power Administration
BCHA - - - British Columbia Hydro & Power Authority
USR - - - Bureau of Reclamation
    USFC - (Denver Federal Center)
    USLC - (Lower Colorado)
    USLM - (Lower Missouri)
    USMP - (Mid-Pacific)
    USPN - (Pacific Northwest)
    USSW - (Southwest)
    USUC - (Upper Colorado)
    USUM - (Upper Missouri)
CCS - - - Colorado Springs, City of
CUEA - - - Colorado-Ute Electric Association
USCE - - - Corps of Engineers (North Pacific Division)
CDWR - - - Department of Water Resources/California
EPE - - - El Paso Electric Company
EWEB - - - Eugene Water & Electric Board
GLEN - - - Glendale Public Service Department
IPC - - - Idaho Power Company
LDWP - - - Los Angeles Department of Water & Power
MWD - - - Metropolitan Water District/Southern California
MPC - - - Montana Power Company
NPPD - - - Nebraska Public Power District
NEVP - - - Nevada Power Company
PG&E - - - Pacific Gas & Electric Company
PPL - - - Pacific Power & Light Company
PASA - - - Pasadena, City of
PEGT - - - Plains Electric Generation and Transmission Cooperative, Inc.
PRPA - - - Platte River Power Authority
PGE - - - Portland General Electric Company
PSC - - - Public Service Company of Colorado
PSNM - - - Public Service Company of New Mexico
CHPD - - - PUD No. 1 of Chelan County
COPD - - - PUD No. 1 of Cowlitz County
DOPD - - - PUD No. 1 of Douglas County
GCPD - - - PUD of Grant County
PSPL - - - Puget Sound Power & Light Company
SMUD - - - Sacramento Municipal Utility District
SRP - - - Salt River Project
SDGE - - - San Diego Gas & Electric Company
SCL - - - Seattle Department of Lighting (Seattle City Light)
SPP - - - Sierra Pacific Power Company
SCE - - - Southern California Edison Company
SCPC - - - So. Colorado Power Div., Central Tele. & Util. Corp.
TCL - - - Tacoma Department of Public Utilities (Tacoma City Light)
TSGT - - - Tri-State G&T Association
TGE - - - Tucson Gas & Electric Company
UPLC - - - Utah Power & Light Company
WWPC - - - Washington Water Power Company
WKPL - - - West Kootenay Power & Light Company

AFFILIATE MEMBERS (13)

Anaheim, City of
Bountilful City Light and Power
PUD of Clark County, Vancouver, WA
Electrical District No. 2, Coolidge, AZ
Garkane Power Association, Inc.
Lamar Utilities Board (City of Lamar)
Lodi, City of
Navajo Tribal Utility Authority
Palo Alto, City of
Redding, City of
Riverside, City of
Santa Clara, City of
St. George, City of

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The Member Systems include 19 investor-owned utilities, 9 municipal utilities, 13 cooperative power systems, 3 federal agencies and 2 Canadian systems. (See map.) The Affiliate Members include 9 municipal utilities, 3 cooperatives and 1 public utility district.[9]

Section 1. History

This scenario is one of the emergence of an interconnected electric utility power system in the Western United States conceived and developed for economic and reliability reasons well before the November, 1965 Northeastern U. S. power blackout. A number of large investor-owned utilities, the Bureau of Reclamation and Bonneville Power Administration have been moving forces in this development. The sensational nature of the 1965 Northeastern blackout and the magnitude of the problems inherent in making a large interconnected system function reliably have made it possible for industry utilities to expand their activities across state lines to a regional scale on a contract basis, with little regulatory intervention from state or federal governments, justified primarily in terms of "reliability," i.e., increasing the capability to deliver electricity to consumers without significant or widespread interruption. Information from industry members in regard to their participation has tended to stress reliability, minimizing apparent economic advantages of the interconnected system. Participation and often leadership in the development of the power grid by the Bureau of

Reclamation and Bonneville Power Administration was based on Congressional authorizations.[10]

Prior to the inception of the WSCC, a series of western transmission network studies had been completed by various groups, the majority by two groups: The Pacific Intertie Technical Studies Task Force and the Western U. S. Transmission Study Group.[11] Several electric utilities were involved in both groups and were active in the founding of the WSCC. All were participants in WSCC by April, 1968.[12]

In 1952, a report, compiled under the direction of the San Francisco Office of the Federal Power Commission (FPC), dealt with the economic feasibility of a transmission tie between the Pacific Northwest and Southern California. This joint study by Bonneville Power Administration (BPA), Bureau of Reclamation, Pacific Gas and Electric Company, and the former California-Oregon Power Company, stated that such an intertie was economically feasible, but no connections were made at that time.[13]

In 1958, bulk power producers in what is now the WSCC region were organized in four separate, non-interconnected power pool areas (as noted above). At this time, Bureau of Reclamation facilities in each of the seven Bureau regions in this area also operated independently of each other. In the latter part of 1958, the Bureau completed a transmission line between Region 7 (portions of Colorado, Kansas, Nebraska and Wyoming), which included the Rocky Mountain Power Pool, and the Northwest Power Pool, and thereby interconnected areas in the northern and eastern parts of what is now the WSCC area, as well as some territory slightly to the east of WSCC.[14] This may have been a factor in renewed interest in a Pacific Northwest-Southwest interconnection, especially as both the BPA and the Bureau of Reclamation, the major power suppliers in the Pacific Northwest, were involved in the 1952 study.

By 1959 another joint study, similar to that of 1952, was completed, and as a result, a contract was negotiated for the sale of BPA surplus energy to Pacific Gas and Electric Company. At the request of the federal government, execution of this contract was delayed until August, 1964, pending legislation providing regional preference for federal hydro power.[15] It is significant to note that the dominant interest in both the 1952 and 1959 studies was the prospect of economic savings to the utilities in Southern California, since an interconnected system promised to enable them to purchase blocs of hydro power more inexpensively than they could generate equivalent energy in their own fossil fueled plants. At the same time, benefits were expected to accrue to bulk power suppliers in the Pacific Northwest by providing a ready market for seasonal surpluses of hydro power, and permitting interchanges to increase peaking efficiency there.

Increasing developments in multiple ownership of large mine-mouth fossil fuel generating facilities also seems to have been a factor in stimulating interest in system interconnections. "It was through such an arrangement [in mid-1963] that the Bureau's Region 5 system, a part of the New Mexico Power Pool, became electrically interconnected with the California-Arizona systems, which included the Bureau's Region 2 and 3 systems, respectively."[16] A transmission intertie arrangement between the joint owners of facilities in these areas was the next logical step after such joint ownership of generating facilities, and thus led to further interconnections among systems throughout the southern portion of what is now the WSCC area, as well as with small portions of western Texas (primarily El Paso).

The Bureau of Reclamation had effectively spearheaded separate interconnections of the northern and southern parts, respectively, of what is now the WSCC interconnected "donut," and had also become involved in plans to connect the western ends of these through a Pacific Northwest-Southwest Intertie. In March, 1964, the Department of Interior established criteria for evaluation of several proposals that were then being offered for construction of a Pacific Northwest-Southwest Intertie, a plan for which was approved by Congress in August, 1964.[17] Seven utilities took part in the construction of this intertie, namely:[18]

Bonneville Power Administration
Pacific Power and Light Company
Portland General Electric Company
Los Angeles Department of Water and Power
U. S. Bureau of Reclamation
Arizona Public Service Company
California Power Pool Companies:
    Pacific Gas and Electric Company, San Diego Gas and Electric Company and Southern California Edison Company.

In September, 1964, these participants organized the Pacific Intertie Engineering Guidance Committee, which in turn established three "Task Forces," one of which was the Pacific Intertie Technical Studies Task Force.[19] This Task Force was formed to deal with the technical engineering problems of forming and maintaining an interconnection between the electric generating facilities in the Pacific Northwest and the Pacific Southwest.

In October 1964, the Bureau of Reclamation completed major test closures of circuits interconnecting the Bureau's Region 4 Colorado River Storage Project system directly with its Region 3 and 7 systems.[20] Together with previous interconnections of the Bureau's Region 5 and Regions 2 and 3, and Region 7 with the Northwest Power Pool, respectively, this effectively interconnected either directly or indirectly, all of the Bureau's facilities in an arc extending from the Pacific Northwest east and south through the Northwest Power Pool and the Rocky Mountain Power Pool to the New Mexico Power Pool, including part or all of the states of Colorado, Nebraska, Montana, South Dakota, New Mexico, and Texas, on the eastern fringe of what is now the WSCC "donut": and from there westward through the California-Arizona systems. The only break in the "donut" at that time was soon to be filled by the Pacific Northwest-Southwest Intertie.

At about the same time construction plans for the Pacific Northwest-Southwest Intertie were getting underway, and the Pacific Intertie Technical Studies Task Force was formed to study technical problems posed by that project, another group was being formed to study problems posed by interconnection of electrical systems in the southwestern part of the area now covered by the WSCC. In early 1964, it became apparent to the Engineering and Planning Committee of WEST Associates, an organization of 23 electric power suppliers in the western United States, that they should cooperate in planning studies with the Bureau of Reclamation.[21] By the fall of 1965, this WEST/Bureau study had progressed to the point where it became evident that its scope should be enlarged, from merely considering that portion of the Pacific Northwest-Southwest Intertie located in Arizona and Nevada (as it pertained to the associated transmission developments in the Four Corners--Eldorado--Mohave--Los Angeles basin area) to coordinating and developing plans for a southwester electrical system covering Arizona, southern Nevada and southern California, with interconnections to Utah, Colorado, and New Mexico.[22]

This study was to include assessment of the feasibility of marketing power from northern Arizona, southern Utah, the Four Corners area, and the then-proposed Central Arizona hydroelectric developments.[23] A task force was formed to study the overall flow problems in the eleven western United States, with emphasis on the loop formed by new ties with existing systems along the west coast and through Utah and Colorado.

This task force included representatives from the WEST/Bureau group, the Pacific Northwest-Southwest Intertie group, and the Rocky Mountain area, and took on the name: Western U. S. Transmission Study Group (WUSTS). WEST members participating directly in the study included Arizona Public Service Company, Pacific Power and Light Company, Public Service Company of Colorado, Public Service Company of New Mexico, Salt River Project, Southern California Edison Company, Tucson Gas and Electric Company and Utah Power and Light Company. The rest of the 23 WEST members participated financially in the study.[24] Other groups participating actively in this study were Pacific Gas and Electric Company, Washington Water Power Company, Portland General Electric Company, Idaho Power Company, Montana Power Company, U. S. Bureau of Reclamation and the Bonneville Power Administration.[25]

Again, it is noteworthy that economic as well as reliability considerations were at the base of this study-group's activities, and that the

Bureau of Reclamation and BPA were thoroughly involved. In fact, some investor-owned utility executives have indicated that the leadership of the two federal power marketing agencies was essential to the ultimate development of the WSCC system.

The work of both the Pacific Northwest-Southwest Intertie Task Force and the Western U. S. Transmission Study group was well under way by the time of the first major U. S. power blackout (November, 1965) in the Northeastern United States. These studies continued through the inception of the WSCC in 1967, and further interconnection of the facilities of the Bureau of Reclamation likewise continued.

It should perhaps be noted that there were many technical unknowns with respect to the design and operation of a system as large as that contemplated for the WSCC region, and considerable research and analysis went along with the construction of the system. In February, 1967, the Bureau first successfully tested its East-West ties in Montana, Nebraska and South Dakota, thereby displaying a capability for interconnecting the vast interconnected generating capacity of the eastern United States with that in the western states.[26] Although these lines are still troublesome, in that the systems are not otherwise properly adapted to interconnection with each other on a continual, day-to-day basis, the thrust of Bureau of Reclamation activity in this regard, at that time, was clearly towards a nationally interconnected system.

In March, 1967, the Western Systems Coordinating Council was organized and in August, 1967, the WSCC Agreement establishing the organization became effective initially with 40 members.[27] By this time those concerned had concluded that existing interconnections in the "donut" would require an effective area organization to include all entities participating in the interconnections within the region, so the WSCC was organized to include the four previously existing power pool subregions.

In November, 1967, the WUSTS group expanded its study to include the two major transmission lines of the Mid-Continent Area Power Planners (MAPP-now Mid-Continent Area Reliability Coordination Agreement--MARCA) system into Duluth and St. Louis.[28] The purpose was apparently to improve operation of East-West ties.

Data compiled and studies undertaken by the Western U. S. Transmission Study group became the continuing responsibility of the Planning Coordination Committee of the WSCC as of March 1, 1968[29] and by April, 1968, the Pacific Intertie Technical Studies Task Force had been dissolved with the apparent expectation that its stability and load flow studies of the western interconnected systems would also be continued by that same Planning Coordination Committee.[30]

The Bureau of Reclamation, however, continued to press for a nationally interconnected system. In February, 1968, the Department of the Interior released its Transmission Study 190. This

Report 190, prepared by the Bonneville Power Administration, the Bureau of Reclamation and the Southwestern Power Administration under initial direction from President John F. Kennedy, recommended a series of interconnections extending from Grand Coulee, Washington, across the northern United States all the way to Chicago. The ultimate objective was a nationally interconnected electric power system.[31] The WSCC criticized the project proposed in this study as too costly and unreliable.[32]

In October, 1971, the Bureau released its North Central Power Study, which proposed utilization of coal and water in the vicinity of the East-West ties to generate electric power on the magnitude of 43,000 Mw for the Eastern system and 10,000 Mw for the Western system, with transmission interconnections between Gillette, Wyoming and Stegall, Nebraska (in the WSCC system) extending as far east as St Louis and the Twin Cities.[33] WSCC currently maintains no closed interregional interconnection with other regionally coordinated areas, though it has planned a 100 Mw reciprocal interconnection with the Mid-Continent Area Reliability Coordination Agreement (MARCA) to the northeast,[34] for completion by 1980.[*] With the exception of the Electric Reliability Council of Texas (ERCOT), and the WSCC, all the other regional electric reliability councils in North America already have substantial interregional interconnections.[35]

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[*] Mr. J. L. McKinley, WSCC Administrative Manager, indicates this tie may be operable as early as 1976.

All general officers of the WSCC, and all chairmen and vice-chairmen of the standing committees of WSCC during 1968 and 1969, were representatives of those utility entities that had been active participants in the Western U. S. Transmission Study group prior to the inception of the WSCC,[36] thereby providing continuity of leadership between the two groups. Many of these entities had also been actively involved in the Pacific Intertie Technical Studies Task Force. Both of these groups had been formed to study questions of the economic benefits of intertie arrangements to their participants. These studies were continued by the WSCC.* However, when asked early in 1969 if the formation of the WSCC was "for economic savings or reliability," the then-Chairman of WSCC, Floyd L. Goss, replied "Reliability only."[37]

This position emphasizing reliability has been promoted by the WSCC and other similar organizations, and among other things perhaps reflects a public relations response to the Eastern blackout of 1965, as well as confusion about fragmented regulatory policy in the late 1960's and early 1970's. The economic benefits to individual participating utilities should not be ignored, however, since reliability and economic benefits tend to be closely related facets of general system operation.

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*Interviews with industry executives indicate that representatives of certain of these utilities continue to fill leadership roles in the WSCC today, and may be viewed as among the moving forces in this organization. These include Pacific Gas and Electric Company, Southern California Edison Company, Utah Power and Light Company, the Bureau of Reclamation, Arizona Public Service Company, and the Bonneville Power Administration.

Benefits from increased interconnection of generating and transmission facilities, while dependent on the degree of actual coordination of planning and operations, can be realized in several ways.

1) Operating costs can be reduced or held to a minimum through a program to select for dispatch the power from those generators capable of producing it most cheaply. The PJM system, for example, comprised of a dozen separately owned companies, can dispatch power to Pennsylvania, New Jersey, and Maryland from whichever generator within that area can produce and transmit it to a given point at the lowest incremental cost. American Electric Power Company and groups in New England and New York have similar systems, with varying degrees of sophistication, and the Intercompany Pool, a subpool within the WSCC, may to some extent approach this kind of operation. It may thus be possible to reduce costs by coordination of operations alone, whenever the units owned by different companies have different incremental costs, and central dispatching of power from all of them together as one system allows fuller utilization of those units with lowest marginal costs.

2) Costs for meeting peak demands can be reduced by taking advantage of the fact that demand varies according to the time of day, and

season of the year. The WSCC system spans two time zones and experiences wide seasonal variations in peak demand between the northern and southern portions of the WSCC "donut." Companies in different regions that experience peak demands at different times can save capital expenditures on generating capacity by using the peaking capacity in one region to supply part or all of the peak demand in the other.

3) Costs of maintaining reserve generating capacity can also be reduced through increased coordination and interconnection. "A system's reserve requirements depend upon a number of factors, including the size of generating units and their mix within a system, the number of units, and the duration of demand peaks. Forced outage rates (affected by type of equipment, fuel used, and weather), errors in predicting future demand, and the configuration of transmission lines also play a part."[38] Increased coordination and interconnection can reduce these costs by reducing the risk of underforecasting demand and allowing the sharing of breakdown reserves and substitute capacity needed during periods of maintenance work. Sharing reserve capacity allows each firm to call on the reserves of others in time of generator outage, and to schedule the use of the same spare generator as a substitute for one undergoing periodic maintenance. It is suggested that such sharing may reduce investments in reserve capacity sufficiently to offset increased

expenditure for interconnecting transmission lines, in whole or in part. The extent to which such benefits are realized can be expected to vary between utilities, however, for reasons discussed below.

4) Generating costs can be reduced by coordination if it allows the utility or pool to take advantage of economies of scale in generator size. This may be largely a function of the size of the pool, however. The most efficient way to make electricity usually is to install the largest generator that technology permits (approximately 800-1300 Mw in the early 1970's),[39] but large generating units require large backup units in case of breakdown, and recently larger units have tended to break down with greater frequency; pooling of financial resources in joint ownership with tenancy in common in new, large generating plants is one way in which utilities which might not otherwise be able to take advantage of such economies of scale can do so.

5) Transmission reliability costs can also be reduced through coordinated planning and operations across a wide geographical area, because interconnecting transmission lines must be sufficiently strong to withstand substantial power surges immediately after breakdown of a large generator or major transmission line, and operating procedures must be fairly uniform so as not to upset the equilibrium of the system in normal situations, or further unbalance it during contingency situations. Once the initial interconnections are made, the generating or transmission

plans and practices of one utility or pool will affect the need for lines elsewhere, and if affected utilities fail to coordinate their plans, there is a risk of power failure, on the one hand, or waste, on the other.

6) Social costs, such as adverse impacts from electric power generation and transmission on the environment, may also be reduced through coordinated planning, by reducing total construction and facilitating the placement of plants so as to produce the required amount of power at the lowest cost to the environment. Faced with the prospect of some necessary impact on the environment, coordination of planning in a wide geographical area offers real possibilities for building fewer plants, in areas where the social costs will be felt the least, while still meeting load demand and reliability criteria.*

The expansion of system interconnections in the WSCC area were stimulated by a number of factors, some inherent in such interconnections and some unique to the area under consideration. Hence, benefits resulting from such cooperation included:

1) Improved system stability, or the ability of the system to absorb or withstand major disturbances without interruption of power service to the public;

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*The preceding discussion of interconnection benefits draws heavily on material published by Stephen G. Breyer and Paul W. MacAvoy, Federal Regulation by the Federal Power Commission (Washington; The Brookings Institution, 1974) pp. 91-94.

2) Instant availability of group assistance to an individual electric system within the interconnected systems in time of loss of generating capacity or other emergency, or the ability to recover swiftly from a major disturbance;

3) Pooling of money and effort in joint construction projects involving the use of large, more efficient generating units, to save on capital expenditures;

4) Balancing out of surpluses and shortages in power generation between the interconnected regions, to obtain maximum economy and operating efficiency by sales or exchanges of blocs of power; and

5) Increased flexibility in the scheduling of generator outages for routine or special maintenance.

Factors of particular importance to the WSCC area which have favored widespread systems interconnection and cooperation include:

1) Efficient use of seasonal surpluses of hydro power generation in the Pacific Northwest, and benefits from seasonal load diversity between that area and the Pacific Southwest (which was and is primarily dependent on the use of fossil fueled steamplants that can be shut down with savings in fuel costs when surplus power from the Northwest is available). The Northwest, by importing a small average amount of steam energy from the Southwest to fill in the "low spots" in streamflow, is able to firm up its overall operation and guarantee delivery of additional

amounts of power. This permits utilities in each region to meet peak loads with less plant investment than if each region was to install generating capacity to meet its own peaks,[40] and to provide necessary reserves;

2) A tendency toward joint ownership of major mine-mouth generating facilities with savings in capital expenditures and economies of scale;

3) Bureau of Reclamation interconnection of its own facilities. Such interconnection on a regional scale, including those of the East-West type, permitted (at least theoretically) integration of Bureau of Reclamation operations among widely separated river basins, which have diversities in precipitation and water flow patterns on a yearly or several-year basis. This permits maximizing power generation and hence revenues for the Bureau through interregional transfers; in addition these interconnections offer greater opportunities to the Bureau to supply possible energy shortages in its load obligations from the most economical non-Federal sources;[41]

4) The Pacific Northwest-Southwest Intertie enables Northwest utilities to sell in California, Canada's share of Columbia River Treaty energy while it continues to be surplus to Canadian and/or Northwest needs. Canada agreed to sell, and Northwest utilities agreed to buy

this power through approximately the year 2000 AD (initially about 1.4 million Kw per year).[42]

Benefits to be derived from the Pacific Northwest-Southwest Intertie were expected to exceed cost of the facilities by a ratio of 2.5 to 1, with direct dollar benefits to the Pacific Northwest of $1 billion, to California of $869 million, and to Arizona and Nevada of $724 million.[43] The purpose of the Intertie, then, was to coordinate operation of all utility systems in the vast area of the western U.S. "to obtain maximum [engineering and economic] efficiency and economic utilization"[44] of available generating capacity. The WSCC reported exchanges of energy on the Pacific Northwest-Southwest Intertie totaling 20 million MWH to the south and 1.5 million MWH to the north during 1975, at a savings of approximately 33.3 million barrels of fuel oil, of which approximately 24.8 million barrels represented transfers of surplus energy.[45]

Each member utility of the WSCC, on joining the interconnected system, brought to the system all existing and planned transmission corridors, and made these available for use by other member utilities, thereby providing mutual economic advantage to all members resulting from savings on purchase of lands and siting delays for additional transmission lines between generating facilities. In many cases, additional lines could be located in existing corridors owned by other utilities.

Such economic benefits are an important result of the activities and operations of the interconnected WSCC system.

Section 2. Other Related Organizations

Federal Power Commission

The Federal Power Commission (FPC) was created in 1920 by the Federal Water Power Act, which gave it licensing authority over hydroelectric facilities,[46] and its statutory authority over electric utility companies was expanded in 1935 by the Public Utility Holding Company Act to include regulation of the price of wholesale sales in interstate commerce.[47]

Under Section 202(a) of the Federal Power Act, the Federal Power Commission is charged with:

> ". . . assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources."[48]

In pursuit of this goal, the FPC is further

> ". . . empowered and directed to divide the country into regional districts for the voluntary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy. . ."[49]

The FPC also has, under Section 202(b) of the Federal Power Act, the authority to require utility companies to interconnect their facilities; thus upon receipt of a complaint of either a state commission or a public utility, it can order a utility to

> ". . . establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the transmission or sale of electric energy. . . ."[50]

The FPC, however, has used this power infrequently, preferring to construe it narrowly so as to apply only to emergency situations,[51] and then only to the joining of wires, and not to the carrying of power across them.[52] Whether this position is reasonable is subject to some question[53] but it is clear that such a position would have only limited significance in fostering further interconnections of systems in the electric utility industry.*

Assertion by FPC of jurisdiction over any electric facility which is connected to another facility that sells electricity in interstate commerce, regardless of whether the former has any connections at the state line, or any contracts to sell electricity with any out-of-state system, has been recently upheld by the Supreme Court of the United States.[54] Though utilities in some areas of the nation may have resisted such connections in order to avoid FPC jurisdiction,[55] the commission's authority is now broad enough, at least in theory, to reach virtually every important generating and transmitting facility in the country.[56] Whether it is willing to make use of this jurisdiction to foster rationalization of the electric power industry is, however, another question. In spite of its long standing mandate, Federal Power Commission regulation of the electric power industry prior to 1960 had had only limited impact.[57]

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*For a detailed discussion of FPC jurisdiction and the coordination problem in the electric utility industry, see Breyer and MacAvoy, "The Federal Power Commission and the Coordination Problem in the Electrica Power Industry," 46 Southern California Law Review 661 (June, 1973).

During the 1960's, however, the FPC began to take a more active role in regulating electric utilities. In 1964, the FPC published an extensive study of the industry (the 1964 National Power Survey[58]), which concluded that, by closely coordinating power plant construction and operations, the nation's electric companies could produce power far more cheaply than was then the case.[59] This report was written by FPC staff members on the basis of studies undertaken jointly with 120 representatives of the industry, and--while disagreeing with many of the survey's conclusions--most industry leaders praised its method of analysis and accepted its general conclusion that greater coordination was necessary.[60]

While the survey is subject to a certain amount of criticism for various shortcomings,[61] subsequent studies done by William R. Hughes,[62] which have been described as "cautious" and "detailed," seem further to support the general conclusions of the FPC survey.[63] It has been said that, while neither the Hughes report nor the 1964 FPC survey presumed to measure the costs of "undercoordination" with much accuracy, taken together they showed that, "as of 1964, a movement toward optimal coordination could reduce the nation's electricity costs from $1 billion to

$2 billion per year by 1980."[64] A subsequent critical re-evaluation of the 1964 FPC survey, in light of a similar survey conducted by the FPC in 1970,[65] together with statistics on the electric utility industry published by the FPC, and information submitted by the regional councils to NERC for the years 1970 and 1971, reached the conclusion that "the amount of electricity subject to pooling in 1970 was not substantially greater than in 1963,"[66] and that greater coordination than existed in 1972 could still result in total savings of $2 billion a year by 1980.[67] If the analysis here is as sound as it appears to be, this figure may yet err on the low side in light of increasing construction costs since the most recent study was completed.

Soon after publication of the 1964 FPC survey, national attention was further focused on the problem of transmission reliability by the Northeast power failure of 1965, and in 1967, the FPC published an extensive report on the subject (Prevention of Power Failures[68]), which suggested ways of increasing the reliability of the nation's transmission systems. Subsequent to the publication of this report, and consistent with both its findings and with the authority vested in the FPC by the aforementioned provisions of the Federal Power Act, the FPC called upon the electric power industry to establish national and regional coordinating bodies.[69] The industry responded by setting up regional coordinating councils, such as the WSCC, and a national coordinating council, the

National Electric Reliability Council (NERC), "which subsequently have dealt primarily with transmission reliability and not with the economic aspects of coordination."[70]

National Electric Reliability Council

The National Electric Reliability Council (NERC), a voluntary association of regional reliability councils, was formed in June, 1968,[71] to augment the reliability and adequacy of the bulk power supply and transmission network of the electric utility industry in North America.[72] The first Chairman of the newly organized NERC was the then-Chairman of WSCC, Floyd L. Goss (Los Angeles Department of Water and Power). It is through organizations such as NERC and the WSCC that the Federal Power Commission obtains extensive information from the electric power industry, including an annual survey of existing capacity, future installation plans, forecasts of future demand and estimates of reserve capabilities.[73]

With the vivid and frightening memory of the Northeastern blackout still fresh, the emphasis at that time was on reliability of the transmission network in order to avoid future power blackouts. But program emphasis in NERC has since shifted to that of the adequacy of bulk power supply.[74] This new emphasis brings to the fore questions of successfully siting new generating plants and bringing them on-line without delays.

On May 1, 1975, NERC was incorporated in the state of New Jersey as a "not-for-profit" corporation.[75] Recently, NERC has gone on record as opposing legislation to expand the federal role in regulating the electric utility industry and planning the production of electricity, expressing preference for legislation at the state level.[76] This position, while perhaps geared towards avoiding further "layering" of regulatory efforts, may function to discourage uniformity of regulations governing what is essentially a multistate network of operations in areas such as the WSCC.

North American Power Systems Interconnection Committee

The North American Power Systems Interconnection Committee (NAPSIC) was formally organized in January, 1963, in response to the "explosive pace of interconnection developments,"[77] for the purpose of coordinating operations, especially those factors that promote reliability among the interconnected systems in North America.[78] Its predecessor organizations date back to 1933 and it has functioned largely as an independent organization, although close ties were established with NERC prior to 1972.[79] Representatives of various utilities active in WSCC, notably Pacific Gas and Electric Company and others, have participated simultaneously in NAPSIC and NERC, as well as in WSCC and its predecessors.[80]

On the surface, there would appear to be some overlap or duplication of efforts between NAPSIC and NERC, considering their similar expressions of concern for reliable operation of the interconnected utilities in North America, and the apparent overlap of their geographic boundaries. This may be more apparent than real, however, if one thinks in terms of NAPSIC being the functional equivalent in NERC, of the Operations Committee in the WSCC, discussed below. Liaison between NAPSIC and the Technical Advisory Committee of NERC is provided for in the NAPSIC Operating Manual,[81] and the WSCC Operating Manual is said to be largely an adoption, in principle, of the NAPSIC Operating Manual, with modifications to make it more applicable to special conditions in the WSCC system.[82] As of April 1, 1976, the NAPSIC Committee was comprised of 22 representatives of the nation's electric utilities, eight of which represented power pools or systems within the WSCC area.[83] NAPSIC is currently revising its regional boundaries to conform to those of NERC.[84]

Section 3. Organization of WSCC

The Western Systems Coordinating Council currently has four standing committees: a Planning Coordination Committee, an Operations Committee, a Public Information Committee, and an Environmental Committee. In addition, the WSCC has an Executive Committee, an

Administrative Committee and an Administrative Manager, to run its internal affairs, and a number of task forces, subcommittees and work groups with specific missions.

Planning Coordination Committee

When organized in 1967, the WSCC created two standing committees, --the Planning Coordination Committee and the Operations Committee-- made up of representatives from each of the member systems. The Planning Coordination Committee was set up to accumulate data relevant to the interconnected systems in the WSCC area, to perform regional studies and to formulate reports and recommendations for the Council.[85] Its focus was on the short- and longer-range future. This Committee and its subcommittees have continued and expanded the earlier work of the Pacific Intertie Technical Studies Task Force and the Western U. S. Transmission Study group in studying the performance of the interconnected systems within the WSCC area.[86] The Planning Coordination Committee today recommends system design criteria for additional generating and transmission capacity to WSCC member systems, compiles and disseminates information pertaining to such planned additions, and performs regional studies to assess performance problems of the larger and growing interconnected system. This involves maintenance of a regional data bank and a small Technical Staff in Salt Lake City, Utah, and use of computer simulations of existing and planned load-flows of electricity within the interconnected system under normal and disturbed conditions.[87] While it is the responsibility of each individual utility to plan facilities and resources to meet its future load demands,[88] the WSCC Planning Coordination Committee is involved in early stages of planning new facilities, or increases in generating capacity of existing facilities, well before cost analysis of such plans has begun. Based on technical consideration of additional generating capacity and geographical location, this Committee advises the utilities as to what equipment may be necessary for effective and efficient interconnection of the additional generating capacity to the system.

In some cases, this may require construction, at the expense of the utilities undertaking the project, of additional transmission lines between other parts of the interconnected system, or the installation of additional equipment in other generating facilities within the system, from which the sponsoring utility will obtain directly no electric power whatsoever.[89] This may be difficult to justify unless the total benefits of being a part of the interconnected system are fully understood. Thus, it appears that in accordance with membership agreements, the WSCC may strongly influence connection of new generating capacity within the regional system in accordance with technological requirements set by its Planning Coordination Committee.

Whether the review procedures of the Planning Coordination Committee are adequate for purposes of effective supervision during the planning process, to ensure proper utilization of siting criteria employed by the individual utilities, may be questioned. In fact, such supervision may not be the intended purpose. Difficulties experienced by individual utilities in meeting their own siting criteria in the planning of nuclear plants in California, for instance, do not fall within the supervision of the Planning Coordination Committee of the WSCC.

Since coordination of electric generation and transmission on the scale being undertaken by WSCC has never been done before, both planning and operating the system entails research and development of new technology in order to render operation of the regional system effective and efficient. The extent to which this Committee directly participate in design of or sponsors such research and development has not been reviewed for this study,* but it is evident that as the need for new technology has arisen, it has apparently been swiftly met.[90]

Interconnected operation of a large regional electric generation and transmission system such as that in the WSCC area posed a variety of problems, some of which are as yet without a wholly satisfactory solution. Some were not anticipated, and stop-gap solutions have been devised to allow operation while longer range solutions are being developed.

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*Presumably it is through the individual utilities, as separate entities.

A major problem, evident soon after completion of the Pacific Intertie, but which still has not been solved, is the existence of power flow between control areas different from that which was scheduled. A flow of, say, 500 Mw would be scheduled at one source and a flow of 548 Mw would be received at another point in the system. Such difference is referred to as inadvertant flow, and in the case of the WSCC "donut," these flows may become substantial quantities. While this situation is common to all systems having parallel paths, the problem is usually minor and controllable within a system of one ownership.

The geographic size of the WSCC system, with large variations in transmission voltage levels and impedances between areas, resulted in loop flow around the "donut" which some member systems could not tolerate. Initial solutions involved opening some ties or revising schedules to reduce the flow to tolerable levels. In some cases, new schedule paths were negotiated to conform to actual flow. Additional transmission lines were also built and existing systems revised to accommodate anticipated loop flows.

Long-range solutions are still under study, and the methods of control under consideration include use of phase shifters, asynchronus ties, series capacitors and large additions to the transmission system.[91] Because the WSCC "donut" is somewhat lop-sided, having greater generating capacity and larger load centers on the western side of the loop,[92] it has been suggested that a solution to this problem may lie in careful placement of an additional plant or plants of appropriate size on the eastern side of the "donut." As this loop flow is now on the order of 400 Mw, and with load growth and additional generation may reach 1000 Mw or more in the near future,[93] the implication is clearly one of adding very large plants with regional, rather than local, significance, if indeed balancing inputs is to be a solution to the loop flow problem.

The problem of maintaining a stable interconnected system received much early attention. It was found that large disturbances on the Pacific Intertie system could produce instability in remote smaller systems on the eastern side of the "donut." To combat this contingency, hydro-generator dropping schemes were developed to balance load and generation in the Pacific Northwest, and several automatic separation schemes were implemented. This problem was particularly acute on the Bureau's East-West tie system because of the very large differences in inertia of systems to either side. Further protection against this problem resulted when the Bureau of Reclamation developed a special rate-of-change-of-power relay and made it available to the power industry.[94]

The development of the large, loosely connected WSCC system proved to have a natural oscillation frequency for which the inherent positive damping of the system was inadequate. With the addition of the Pacific

Intertie to the system, this frequency problem became critical. The Bureau then developed a power system stabilizing device to be used on generator exitation systems to provide positive damping. Dynamic stability studies conducted by WSCC found that all suitable units above 75 MVA should be equipped with this device, and over 50 percent of the total WSCC system generation now has this control feature.[95]

To insure compatibility of all new significant generation and transmission additions with the existing interconnected system, the WSCC requires individual utilities to submit proposed development plans for a ten-year period,[96] to be updated each year. This information is also transmitted to NERC and the FPC, and is made available to the general public.

Operations Committee

The second standing committee in the WSCC, the Operations Committee, reviews and analyzes daily and projected future operation of the interconnected system, and makes recommendations to the WSCC concerning new or modified operating procedures to ensure the smooth operation of the system.[97] While the Planning Coordination Committee approaches its tasks from a regional planning and technological problem-solving standpoint, the Operations Committee has adopted what appears to be largely a procedural approach to efficient and stable operation of the regional system.*

While both committees are in a sense concerned with the smooth daily operation of the interconnected system, the Planning Coordination Committee approach tends to be geared towards long-range solutions to foreseeable problems, where the Operations Committee tends to be concerned with day-to-day conditions and contingency planning for emergency situations. To this end, the Operations Committee has developed criteria and guidelines (a dispatcher's handbook, based on the NAPSIC Operating Manual) for efficient daily operation of the regional system; the implementation of techniques and procedures for automatic islanding schemes which separate certain parts of the WSCC system from other parts to thus minimize adverse effects associated with severe contingencies; procedures for reporting outage of critical facilities, and emergency operating procedures. This Committee has also formulated procedures to guide members in coordinating maintenance scheduling for generating units on a regular, rather than on an "as needed" basis. It has also prepared procedures to guide in maintenance of the power system stabilizer control equipment discussed above. It coordinates load shedding and restoration programs during and after severe disturbances to the system.[98]

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*To the extent that the Planning Coordination Committee fosters review of plans for additional generating capacity in terms of size and location, and the Operations Committee is concerned with the effects on operations of alternative means of adapting additions to the system, there may understandably be some overlap of functions between the two.

As part of this effort to provide greater efficiency and coordination during emergency situations, the Operations Committee has established and administers regional Coordinating Centers in Portland, San Francisco, Phoenix, and Montrose, Colorado.[99] These four centers function as public information centers in times of emergency, but beyond that, they have no special capabilities. The one in Montrose, Colorado, for instance, is owned and operated by the Bureau of Reclamation and functions normally as a control center for the Colorado River Storage Project generating and transmitting facilities in the area between Rock Springs, Wyoming and Phoenix, Arizona. It has no direct control capabilities over other interconnected facilities owned by other utilities in the same geographical area, either in times of steady-state or disturbed-state operation. This facility does contain one of four expensive communications terminals owned by the WSCC (the other three being located in the other three Coordinating Centers listed above), the sole function of which is to reproduce uniform information at four points in the western United States. In times of severe disturbance to the interconnected system, this facsimile reproduction communications network produces uniform information in nontechnical terminology, on the technical aspects of the disturbance shortly after the occurrence, for public dissemination. It in no way enhances the control center's capability to prevent or control such disturbances, and the several direct voice communications systems in normal use by dispatchers in these facilities are said to be faster and more reliable.[100]

Public Information Committee

In December, 1968, the WSCC established a third standing committee, the Public Information Committee.[101] As part of a stepped-up public relations effort, this committee was formed: to revise a manual for member organization's "public information men," to prepare a brochure describing the WSCC for public distribution by member organizations, to polish up procedures for disseminating uniform information in emergency outages involving more than one utility, and to coordinate efforts with other regional councils and NERC "to develop national awareness of the public benefits"[102] derived from regional reliability council coordination efforts. This committee is the official WSCC contact with the general public, and is in charge of maintaining good relations with the news media. It publishes materials for public distribution, including brochures describing WSCC organization, objectives and problems. It has distributed a feature story to members "for use in company publications and local print media,"[103] and has access to the Operations

Committee voice and facsimile communications networks at the four regional WSCC Operations Coordinating Centers, in event of any major disturbance or emergency.[104] WSCC Annual Reports are compiled and distributed by this Committee.[105]

Environmental Committee

In the fall of 1970, a fourth standing committee was established by the WSCC, the Enviornmental Committee. The functions of this committee are to study environmental issues relating to power system facilities, to review related problems experienced by member systems in their operations, to prepare environmental guidelines for siting of generating stations, transmission lines and substations, and to establish lines of communication with representatives of the environmental movement in the region "in order to incorporate environmental concepts of these concerned groups into the initial planning stages of new power installations."[106] This committee initially included 12 representatives of various member utilities and utility-oriented federal and state agencies, and 8 non-industry environment-oriented members. It has apparently achieved a measure of credibility by virtue of its activities, including participation by respected members of the scientific, academic, environmental and conservation communities.

In September, 1971, the committee published a booklet of Environmental Guidelines for use by member systems in siting industry installations. While each utility is free to develop its own siting criteria, this publication was generally well received by the industry and is now being revised. During 1973 and 1974, a series of meetings with representatives of environmental organizations in the WSCC area helped to encourage dialogue with the environmental community.

The WSCC seems satisfied with the reception programs of its Environmental Committee have enjoyed among the general public, and the environmental and conservationist communities in particular. These programs have received a good deal of attention from the Public Information Committee, and from other regional coordinating councils, as well as NERC, and may serve as a model for similar programs in other regions in the future. WSCC members view the activities of this committee as a sincere attempt by the electric utility industry in the Western states to achieve a functional balance between conflicting demands made on them by the general public (for both increased electrical power and maintenance of the environmental status quo), especially with respect to siting of additional generating facilities and transmission lines. However, interviews with some representatives of the environmental community listed as participants in the 1973-74 seminars conducted by the Environmental Committee indicate that these meetings may not have been quite so well received as subsequent WSCC publications dealing with them would tend to indicate. The committee's efforts may be viewed by others more critical than WSCC members may be, as an attempt to coopt individuals in the environmental movement and thus gain support or reduce hostility from this quarter. Most likely both points of view have some validity. At any rate, it appears that the WSCC has achieved a measure of success in developing lines of access to its decision-making process for the expression of environmental values. The degree of incorporation of such environmental considerations into the planning process can be expected to vary from utility to utility.

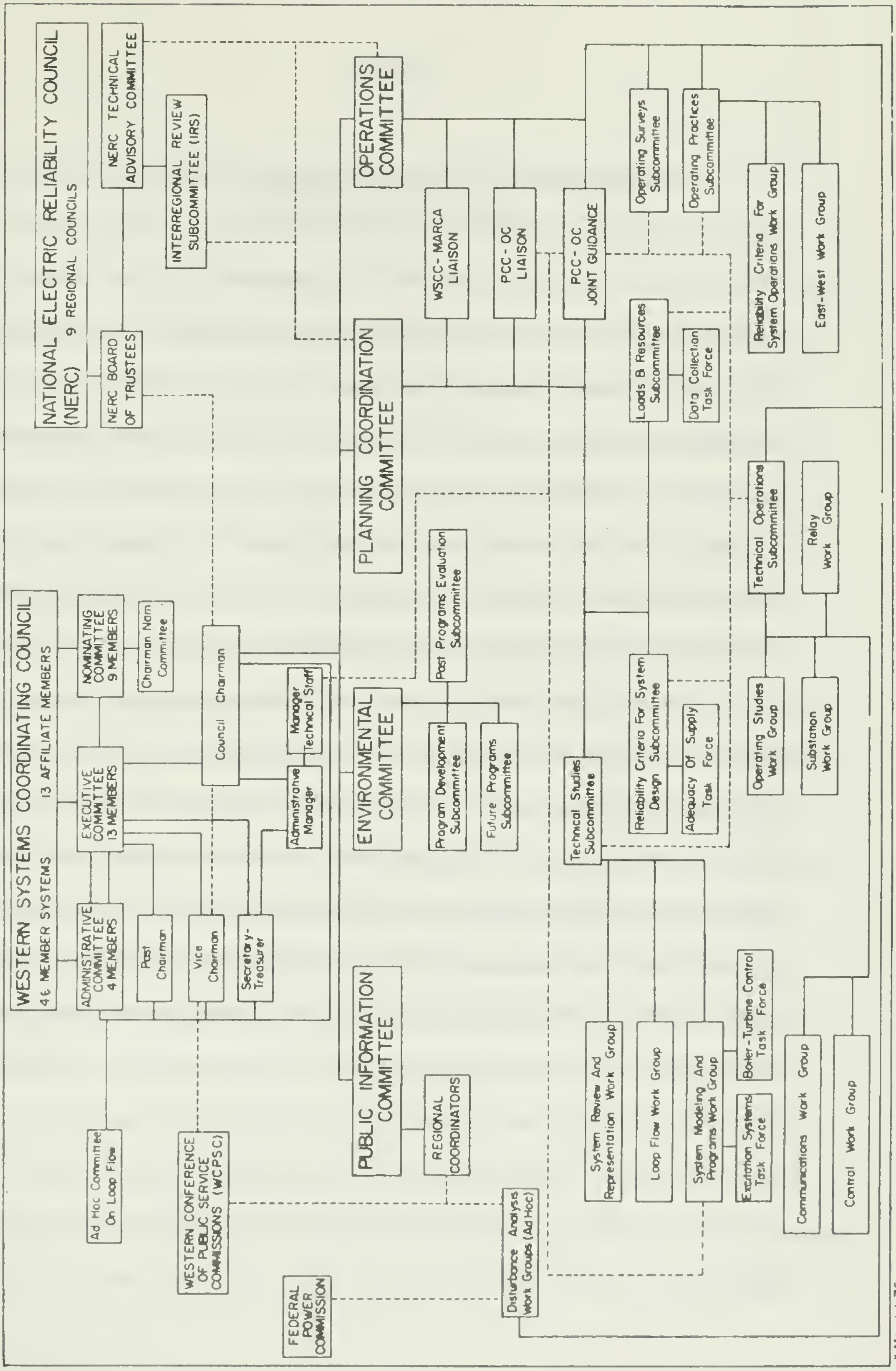
Administration of the WSCC

An Executive Committee, consisting of the WSCC general officers, the immediate past chairman, and twelve elected representatives of member systems, has long met in scheduled quarterly meetings to administer the work of the WSCC between annual general meetings. During 1975, a reorganization at the top of the WSCC organizational structure took place, probably reflecting routinization of its activities. The result has been concentration of greater responsibilities and duties in fewer offices. An Administrative Committee was formed to "act on such matters as may be necessary between scheduled meetings (now three annually) of the Executive Committee."[107] This Administrative Committee is made up of four members: the Council Chairman, Vice Chairman, Immediate Past Chairman, and Secretary-Treasurer. Simultaneously, the Executive Secretary, presently Mr. J. L. McKinley, was appointed Administrative Manager and given responsibility for overall direction of the work of the Council, including supervision of the WSCC Technical Staff and supervision of accounting procedures (relinquished by the Secretary-Treasurer). In addition, the Administrative Manager carries on the duties of Executive Secretary. The following standard organizational diagram for the WSCC[108] does not indicate the importance of the position of the Administrative Manager, nor how he functions. Only a detailed analysis of day-to-day operations would begin to suggest this information.

Section 4. Other Activities of the WSCC

In addition to activities already described, representatives of the WSCC have taken part in a variety of activities geared towards influencing public policy or public attitudes toward the electric utility industry.

In December, 1968, the WSCC designated two persons to prepare a critique of the Department of the Interior Transmission Study 190, released in February, 1968[109] and discussed above. In January, 1970, an industry group, representing WSCC and other regional coordination councils (Mid-Continent Area Power Planners (MAPP-now MARCA), Mid-America Inter-Pool Network (MAIN), and East Central Areas Reliability Agreement (ECAR), issued their criticisms of Report 190.[110]


NATIONAL ELECTRIC RELIABILITY COUNCIL (NERC) 9 REGIONAL COUNCILS
NERC BOARD OF TRUSTEES
NERC TECHNICAL ADVISORY COMMITTEE
INTERREGIONAL REVIEW SUBCOMMITTEE (IRS)
OPERATIONS COMMITTEE
PLANNING COORDINATION COMMITTEE
WSCC-MARCA LIAISON
PCC-OC LIAISON
PCC-OC JOINT GUIDANCE
Operating Surveys Subcommittee
Operating Practices Subcommittee
Reliability Criteria For System Operations Work Group
East-West Work Group
Loads & Resources Subcommittee
Data Collection Task Force
Technical Operations Subcommittee
Relay Work Group
WESTERN SYSTEMS COORDINATING COUNCIL
46 MEMBER SYSTEMS 13 AFFILIATE MEMBERS
NOMINATING COMMITTEE 9 MEMBERS
Chairman Nom Committee
EXECUTIVE COMMITTEE 13 MEMBERS
ADMINISTRATIVE COMMITTEE 4 MEMBERS
Past Chairman
Vice Chairman
Secretary-Treasurer
Council Chairman
Manager Technical Staff
Administrative Manager
ENVIRONMENTAL COMMITTEE
Post Programs Evaluation Subcommittee
Program Development Subcommittee
Future Programs Subcommittee
Reliability Criteria For System Design Subcommittee
Adequacy Of Supply Task Force
Technical Studies Subcommittee
Operating Studies Work Group
Substation Work Group
PUBLIC INFORMATION COMMITTEE
REGIONAL COORDINATORS
System Review And Representation Work Group
Loop Flow Work Group
System Modeling And Programs Work Group
Boiler-Turbine Control Task Force
Excitation Systems Task Force
Communications Work Group
Control Work Group
Ad Hoc Committee On Loop Flow
WESTERN CONFERENCE OF PUBLIC SERVICE COMMISSIONS (WCPSC)
FEDERAL POWER COMMISSION
Disturbance Analysis Work Groups (Ad Hoc)

In 1972 the WSCC through its Chairman represented utilities of the Northwest in hearings on the Magnuson Bill, S. 1684, at Pasco, Washington. In this year, the WSCC Chairman also voiced support of views expressed by the NERC Chairman relating to changes desired in HR 11066 affecting power plant siting.[111] In 1973, WSCC Executive Committee members made numerous appearances before Congressional Committees on behalf of WSCC to present statements on the presumed effects of proposed surface mining legislation.[112] Similar appearances continued in 1974 in relation to revision of the Energy Minerals Allocation Recommendation System of the Bureau of Land Management, the proposed Federal Coal Leasing Program, the proposed Clean Air Act Amendments, and Project Independence.[113] Restraints imposed on utility activities by federal agencies are "typically viewed as supplementary forms of regulation,"[114] and there is a strong presumption that the attitudes of most WSCC members towards increased federal regulation of the electric utility industry were fairly accurately represented by the President of NERC in hearings before the Senate Committee on Commerce held in April, 1976 (discussed below).

Section 5. Regional Reliability, Economy and Efficiency in the WSCC

The large networks which are characteristic of the electric utility industry in the United States are planned and operated in a complex process that includes a mixture of independent and coordinated decision making by a large number of managerial units or systems: holding companies, independent operating companies, various public power entities, and cooperatives.[115] The WSCC is fairly typical, in this respect. The daily operation of the WSCC interconnected "donut" is performed on a multi-system basis, with energy transfers between utilities being centrally dispatched at the level of the individual utility, or at the multi-utility level of some power pools, but not at the level of the larger WSCC system. Generally, operation of generating and transmission facilities in the WSCC area seems to follow patterns of ownership. There are perhaps 20 control facilities in the WSCC system capable of monitoring, scheduling and dispatching energy from generating facilities through a portion of the larger interconnected system, with control over varying amounts of generating capacity.

The Intercompany Pool in Spokane, Washington, centrally controls all the facilities of Utah Power and Light Company, Pacific Power and Light Company, the Idaho Power Company and the Montana Power Company, which includes essentially all of the generating capacity in that region.

This is a good example of a "centrally dispatched" power pool. The members of INPOOL, on the other hand, including Arizona Public Service Company, Colorado-Ute Electric Association, Salt River Project, Public Service Company of Colorado, Tri-State G & T Association, the City of Colorado Springs and the Bureau of Reclamation/ Colorado River Storage Project (CRSP), operate their interconnected generating and transmission facilities from a number of separate control centers. In an operations sense, INPOOL is an example of a "coordinated" power pool, but the facilities owned by its member utilities are not controlled from one central location.

The Colorado River Storage Project control facility, located in Montrose, Colorado, monitors and controls fifteen generating units and the transmission lines connecting them in a geographical area extending from Rock Springs, Wyoming, to Phoenix, Arizona. This facility has no control over a number of other interconnected generating facilities and transmission lines located within the same geographical area. An elaborate communications system provides access to other control centers in the region, and teams of three dispatchers working eight-hour shifts, twenty-four hours a day, manually control the generation and transmission of electricity from CRSP units--consistent with previously negotiated contractual agreements--with minute-to-minute adjustments of load schedules, and with computer assistance.

Power system dispatchers in the WSCC frequently have some basic computer or electrical training but are selected for prior experience in power plant operation and trained "on-the-job," on a sort of apprenticeship basis under a more experienced dispatcher, with supplementary "short-courses" often provided by the employer. In this way, they learn to operate the particular control facility consistent with uniform guidelines provided in the NAPSIC and WSCC Operating Manuals, which may be kept in the control room.

The central fact of bulkpower economics is the highly interdependent, interrelated nature of the whole network, which requires a high degree of technical coordination in design of facilities and in operating procedures if the network is to function at all.[116] Power system dispatchers know where the least-cost generators are located in their own and other connected systems, and actively seek the least expensive source of energy to meet the difference between their own generating capacity and their loads, presumably consistent with the aforementioned uniform operating guidelines. They generally have considerable latitude as to how much they may buy or sell, and with whom, but no discretion to bargain as to price, as this is fixed between the various utilities in previously negotiated non-firm, "as available" contracts.

Opportunities for misuse of the interconnected system are alleged to be rampant in this process, and abuses are said to be commonplace, frequently taking the form of energy scheduling that overloads transmission lines on a short-term basis, risking loss of reliability for the sake of profit. The transmission lines thus being overloaded may not necessarily be owned by the one who is overloading them, in an interconnected system. This type of problem may have been what NAPSIC was alluding to in its report to the National Electric Reliability Council when saying "It is suspected that the deterioration in control may be associated with efforts to reduce production costs."[117]

Such practices are easily detected by other utilities in the interconnected area, and in the western states the offending parties are taken to task in WSCC committee meetings. This procedure is laden with the problems inherent in a committee-conference procedure, and as the only sanctions available for abatement are informal ones consisting of one or more utilities threatening not to do business with the offenders, it may have only limited efficacy.[*] It has been suggested that there are ways in which a utility might maximize economy and efficiency of operations more consistent with the concern for reliability.

It should be clear that organizational titles such as "coordinating council" and "pool" can be misleading, as they "do not reveal the degree of joint planning and operation that underlies them."[118] They may be used in such a way as to embrace a variety of interrelationships between companies, the same term often being applied to relationships which actually exhibit quite different characteristics. "Coordination" similarly "is a catchall term that embrances all forms of cooperative economizing by two or more systems"[119] in the electric power industry.

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[*] The preceding discussion, except where otherwise noted, is based on interviews with operations personnel conducted on October 29, 1976, at the Colorado River Storage Project Power Operations Office, Montrose, Colorado.

The production of electricity in the WSCC region runs the gamut between single and multiple-utility activity with wide variation in the degree of actual coordination, and corresponding differences in overall economy and efficiency of operations. Coordinated "subpools" within the WSCC region may be characterized by close cooperation and central dispatch of facilities with diverse ownership; by loosely affiliated groups which review each other's plans and do considerable amounts of business with each other on a daily basis (but do not take full advantage of the benefits of closer coordination); and by individual utilities going about their business within the loose framework of essentially optional adherence to uniform operating criteria.

While it would appear to be feasible to centrally dispatch the entire WSCC interconnected system with existing technology, such is not now the case and may not be desirable, notwithstanding the seemingly insurmountable obstacles to it inherent in current diverse patterns of ownership and the requisite substantial financial expense. It has been suggested that, in terms of overall economy and efficiency of operations consistent with a given reliability standard, the maximum size for a centrally dispatched system may be 40, 000 to 50, 000 megawatts.[120] With the WSCC already reporting a peak hour for 1975 of 63, 683 Mw, and total generating capacity of 92, 498 Mw,[121] it may well be that there would be no appreciable returns for the expense of centrally dispatching the entire region. "The principal advantages of an efficient coordination pattern can be achieved within subnetworks that are of an appropriate size; further coordination is largely a matter of providing interconnections among subareas and of reconciling decisions at the subnetwork level to make use of special opportunities for joint economy."[122] The WSCC may, in some ways, already be too large and unwieldy to allow effective coordination of planning and operating matters within its boundaries.

"Because these large networks are organized on a multi-system basis, coordination is a problem."[123] Recent studies done by William R. Hughes on the electric industry in the United States as a whole, which closely link both technical efficiency and scale-related technological advancements to the organization of the industry, indicate that, though some large companies have been doing so, most of the industry has not been able to take full advantage of economies of scale.[124] Noting that, "to attain large-system performance, a group of smaller systems must make basic planning and operating decisions on a combined, one-system basis,"[125] the author suggests that "just as coordination tended to be underrated in the years before the [1964] Power Survey when there was little publicity, the more dramatic and impressive aspects of current coordination now tend to be incorrectly viewed as typical of general industry performance."[126] The suggestion is clearly that the electric power industry, in terms of planning and operations, is neither as well coordinated as it appears to be, or as it should be, in order to achieve maximum economy and efficiency consistent with a given standard of reliability.

This suggestion is further supported in studies done by Stephen G. Breyer[*] and Paul W. MacAvoy[**] which suggest that recent technological change, in the form of increased size of efficient generating units, has increased the need for coordination in the electric utility industry.[127] They argue that central control of electricity dispatching across companies is probably necessary to secure most savings in operating costs, reserve capacity, and generator economies of scale.[128] Of central importance in drawing a distinction between strong pooling efforts and loose coordination attempts is the way in which companies in each treat their reserve capacity. Breyer and MacAvoy assert that "a company, when planning additions to its own capacity and determining its own generating needs, will tend to discount reserves that are theoretically available for use (for they are physically interconnected) but that are in the hands of another company."[129] The determining factor is the extent to which the members of a pool plan together. This is a question that turns, at least in part, on "the extent to which each member treats the reserves of other members as if they were its own."[130]

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[*] Professor of Law, Harvard Law School.

[**] Professor of Economics, Sloan School of Management, Massachusetts Institute of Technology.

Breyer and MacAvoy do not suggest that central dispatching is a panacea to solve the coordination problem overnight, but they do show that "a comparison of smaller, unaffiliated companies, members of 'coordination groups,' pools with centralized planning and dispatching, and fully integrated holding companies suggests that the greater the degree of integration, the more likely that larger generators will be installed."[131]

They conclude that in spite of efforts by the FPC and voluntary coordinating groups, the degree of coordination evident in the electric utility industry in 1970 was not substantially greater than it was in 1963.[132] While there was some increase in coordination during this time, it generally took the form of loose cooperation rather than the formation of strong pools with central staffs that dispatched power and planned capacity additions: "Most planning within the coordination groups consisted of reviewing plans initiated by one of the members rather than centrally designing plans to lower system costs. Coordination groups were not able to set strong area-wide standards for production and the acquisition of capacity."[133] The present situation in the electric utility industry is fairly well summarized as follows:

> "Despite the very moderate growth of pooling, companies have become more likely than they were in 1964 to install large generating units. Planning future capacity is more coordinated now than then. Pools are larger, joint ownership of generating capacity is more common, and a bit more planning takes place on a regional basis. Nonetheless, there is evidence that, in some parts of the country, companies are not taking advantage of possible economies of scale in generators."[134]

This study placed the WSCC region in the category of a loosely coordinated group, and a look at the way in which operations and planning in the WSCC are handled today seems to bear out this analysis, though the WSCC region does contain areas with utilities engaged in stronger pooling efforts than is evident throughout.

The presence of inadequate coordination in an area with a documented earlier concern for the economic benefits of interconnection may at first seem strange, especially in light of the fact that businesses ordinarily try to reduce their costs in order to increase their profits, wherever they can. The fact of the matter is that various utilities in the WSCC have actively resisted interconnection in the past and continue to resist stronger interconnections today.[135]

There is no simple explanation of this phenomenon. Breyer and MacAvoy suggest that various factors inherent in current modes of competition and regulation have combined to dampen the enthusiasm of some firms to achieve coordination economies.[136] They suggest that difficulties in apportioning the potential gains and certain costs of greater coordination and interconnection among partially competitive, partially regulated companies militates against closer coordination, in many areas.[137]

Because the utilities in any given load center compete at the margin for the business of industrial and commercial customers, and because they benefit to different extents from pooling, with the smaller firms benefiting the most (since they would be farthest from achieving full economies of scale by themselves), larger firms that have already achieved substantial economies of coordination may find it more profitable to forego some remaining economies than to pool with some small firms. Otherwise, the larger firms might risk loss of markets through increased competition, which might more than offset the further cost reductions to be realized by further pooling.[138] Similar difficulties surround the allocation of certain costs in pools, such as those involved in strengthening the interconnected transmission system. Stronger interconnections benefit all members, but in varying and indeterminate amounts. Further, various state regulatory commissions may be reluctant to allow companies to contribute to the costs of constructing additional lines in another state, unless it is clear that customers in the home state will benefit.[139] Such clarity in explaining complex technical matters may be difficult, if not impossible, to achieve.

Many of these difficulties in allocation of costs and benefits stem from the committee structure of pool administration adopted by many pools. "Members of committees that operate centrally dispatched pools have complained of the difficulty of making decisions when there is no superior authority with the power to resolve disagreements or to set aside dubious compromises."[140] Such problems may have contributed to the demise of CARVA in Virginia and the Carolinas and ILLMO in Illinois and Missouri, neither of which centrally dispatched electricity but were frequently cited as examples of close planning coordination,[141] and may have underlain the simplification of the PJM committee structure in recent years.[142] The committee method of apportioning operating costs is unlikely to maximize incentives for the most efficient operation of a system,[143] and a centrally dispatched pool using such a method "will operate suboptimally unless the interests of each company and the pool as a whole are identical,"[144] which is more often not the case in systems with diverse resources and patterns of ownership. Use of the committee structure to determine how much reserve capacity each member of a pool should provide is subject to similar problems, which may be complicated further by state commissions which, anxious to protect the interests of the home state, may require maintenance of a level of reserve capacity within a given state that is excessive with regard to the system as a whole.[145]

Further, if coordinated regional planning shows that it would be most economical to build a majority of new plants in the service areas of only a few members, the others may perceive difficulties in maintaining their rate-base,[146] which is based in part on capital costs of construction. This deterrent effect of rate-base considerations has also had its impact on the willingness of utilities to depend on wholesale purchases to meet their load demands, or to engage in long-term staggering of construction of additional generating facilities,[147] though some staggering continues today. It has been suggested that part of the attraction of tenancy in common as an alternative to staggering has been the comparative lack of rate-base difficulties inherent in the former, over the latter.[148] Joint ventures of this type have their own liabilities, however, one of which may be the possibility of forced intervention of a smaller company in the requisite hearings before the FPC or the Securities Exchange Commission.

The recent growth of concern for the natural environment also presents difficulties relevant to strong pooling ventures. Utilities with state charters feel a strong obligation to provide an adequate supply of electricity for the geographical area of their responsibility and yet are faced with the realization that future building sites are growing scarce.[149]

Consistent with population growth patterns, the fastest growing load centers are in municipal areas. A rural firm may resist joining a pool if it perceives that its sites may be used to supply electricity to cities instead of rural areas. Further, if utility planning continues to exhibit a trend toward siting plants on a regional basis, some power plants will likely be located in areas that do not have substantial load demands, as compared to the efficient size of the plant, but which are relatively inexpensive sites for large power plants. The residents of such areas simply may not want to have plants, which will serve customers in distant areas, sited in their "backyard."

The problem here is largely one of formulating pricing and costing guidelines to enable utilities with increasing urban load demands to compensate the rural firm or its customers for the loss of its potential building sites, on the one hand, and for their loss of environmental quality, on the other. Current laws and regulatory policies are inadequate to cope with this problem, and without some means of adjusting these competing interests, opposition to strong pooling on the part of some smaller companies can be expected to persist.[150]

At the same time, the growing sensitivity to environmental degradation has increased the importance of planning regional capacity on a single-system basis.[151] Hughes suggests that:

> "A socially efficient trade-off between environmental values and power supply costs calls for a more thoroughgoing coordination effort than merely approximating minimum commercial bulk power costs. The latter can be approached by patching together locally planned transmission networks with heavy interconnections and backbone grids and by arranging for large units without considering very carefully their geographical distribution.
>
> * * *
>
> Changing the network to reduce unfavorable environmental side effects at minimum cost requires close evaluation of the full range of siting, routing, design, and other alternatives for geographical areas larger than those covered by the service territories of the largest medium- and high-density systems.
>
> * * *
>
> For any pattern of ownership and wholesale-retail division that is likely within the next two decades, greater coordination than in the past will be needed to approximate network optimization, especially if adjustments for environmental factors are effectively to take into account the range of options available to the network."[152]

Hughes, however, is not particularly optimistic, stating that several developments suggest that the organizational problems connected with scale-related performance will continue to be important. These developments include "the transition to nuclear power, environmental considerations, and the continued importance of scale-related technological progress in transmission."[153]

During the earlier years of its existence, changing technology in the electric utility industry provoked similar changes in the pattern of regulation. "More recently, regulatory control has ceased to mirror the scale of operation that technology makes possible."[154] To be sure, the federal government now exerts considerable regulatory authority over the industry in some quarters. Yet, regulation of the electric utility industry today continues to take place, as it did in the 1930's, primarily at the state level, where state commissions set the prices of retail sales and review construction plans. It has been suggested that the planning efforts of the Federal Power Commission have been largely ineffective and that the commission cannot realistically be expected to guide the planning activities of private power companies under existing authority.[155]

Federal policy regulating the electric utility industry has been fragmented and inconsistent, fluctuating between an early policy fostering consolidation of firms, through a period of "trust-busting" by the Securities Exchange Commission (SEC) under the Public Utility Holding Company Act of 1935, to a situation in which the SEC and FPC do not specifically oppose mergers under certain conditions, yet the Justice Department has announced that it "favors pooling via joint ventures and opposes mergers as a means to achieve coordination."[156]

Merger policy at all levels can be viewed as a "mixture of accommodation and selective resistance,"[157] with the recent resurgence of consolidations limited to smaller systems such that "approval of mergers by very large systems may be increasingly difficult to obtain in the future."[158] Understandably, electric utility executives may feel somewhat at a loss to know what is expected of them by regulatory authorities, in times such as these.

A similar situation may account in part for confusion in the industry in the 1960's over a feeling that the FPC was telling it to reduce reserves, "when in fact the intended message was to coordinate so as to reduce the need for reserves."[159] At any rate, reserve percentages fell drastically in the 1960's without the corresponding increase in coordination necessary to preserve reliability,[160] which may in part explain the subsequent industry stress on that theme above all others.

Recent attempts to revamp the role of the FPC have met with little success. In 1969, the commission asked Congress for legislation to broaden its statutory authority by giving the Commission explicit power to compel wheeling, to compel interconnection, and to require further rationalization of the industry. Lee C. White, who was Chairman of the FPC when the bill was proposed, testified in favor of it.[161].

Industry response was not favorable, and White's testimony in support of this "Electric Reliability Bill" was viewed as a sort of "double-cross."[162] He may not have particularly endeared himself to the industry prior to this occasion, however, as the FPC under his guidance had "shoved and cajoled" utilities into installing and using certain load-control devices recommended in the FPC document Prevention of Power Failures published in 1967.

Shortly after introduction of this bill, White was replaced by President Nixon with John Nassikas, who testified in Congressional hearings in early 1970 in opposition to the bill, arguing that "encouragement of voluntary coordination was sufficient to achieve rationalization."[163] The bill was never enacted into law.

Hughes notes that "the history of policy debate is rich with confusion (sometimes desired by the participants) over the relation of broad considerations to more narrowly economic aspects of performance."[164] These include a wide range of interrelated public-private power issues, such as competition for industrial customers, territorial disputes, legal differences in tax and financing status, and preference granted to publicly owned and cooperative systems in buying from government hydro projects. These issues interact with and overlap various broader regulatory questions, including licensing of power plants, wholesale rate regulation, antitrust aspects of power pooling and wholesaling, use of one utility's transmission lines by another, and access to power pools by uninvited systems, which are usually quite small and often publicly owned. Such issues tend to become confused and intermixed in the "highly charged politics of electric power," and much of the debate over the various "reliability" bills is concerned with these admittedly important questions. They have, however, little impact on overall industry efficiency and technical progress, which are closely related to performance within the largely private major systems.* As such, they may serve as much to obscure the real issues as to illuminate.

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*The preceding discussion draws heavily on material published by William R. Hughes in his chapter "Scale Frontiers in Electric Power," in Technological Change in Regulated Industries, ed. William M. Capron (Washington: The Brookings Institution, 1971).

Such was the case in regard to hearings held recently on Congressional legislation concerning electric utility rate reform and regulatory improvement.[165] Underlying the testimony presented there are the kinds of conflicts discussed previously in the context of impediments to closer industry coordination, stemming perhaps in part from the complexities of simultaneous considerations of competition, on the one hand, and regulation, on the other. Superimposed on such conflicting considerations are the various implications of diverse patterns of ownership, especially in regard to rate reform and allegations of a "price-squeeze" by the large private utilities on the smaller municipal utilities.

At base in NERC opposition to proposed legislation creating an "Area Planning Council"[166] to further coordinate planning of electric power production in the United States, is a fear of additional "layering" of regulatory authorities and proceedings on existing fragmented state and federal procedures, with resultant further extension of already rapidly expanding lead-times in the siting of new generating facilities. The avowed industry preference for state over federal legislation is, at best, a difficult choice between the lesser of two evils, for neither is especially conducive to optimum industry performance. Some uniformity of statutory regulation, however, would seem to be of equal importance to the interconnected regional systems in their planning process, as uniform operating guidelines are to the daily operation of the system. This deficiency is comparable in scale to that posed by the absence of a cohesive national energy policy and may reflect this deficiency.

At any rate, it is apparent that achieving substantial cost-savings for the consumer through the planning of electric power systems lies beyond the grasp of the Federal Power Commission[167] as now constituted. Recent criticisms of the FPC by a Congressional oversight committee, for failure to perform its task in an efficient manner, and for reliance on industry figures in its rate-setting procedures,[168] highlight the immediacy and scope of the problem.

Regional councils such as the WSCC have done much to foster more reliable planning and operation of the electric utility industry, but they have not conducted planning exercises to produce the most efficient system consistent with reliability standards.[169] It is not possible to determine with precision the extent to which the industry is failing to achieve coordination benefits. This would require a more comprehensive study than can be done with existing publicly available information.[170] Such information neither lends itself well to a determination of the magnitude of the coordination problem, nor does it spur efforts to overcome it. It is suggested that a better picture of the problem could be obtained if information was compiled and compared on:

1) "estimates of the reserves firms believe they must build to meet a given reliability standard, and

2) engineering studies showing the reserves necessary to meet the same standard on the basis of planning a region as if it were a single system."[171]

This quotation reflects the belief that the planning objective of the electric power industry should be to meet specified reliability standards with as few reserves as possible,[172] in order to maximize economy and efficiency for the consumer by keeping investments low. The Bureau of Reclamation has shown an interest in developing interconnections between electric generating facilities going back at least as far as 1952, and has clearly played a major leadership role in achieving this end since 1958, first by connecting its own facilities in the Western States, and then by pushing hard for the present system. The WSCC was formed, perhaps coincidentally, at almost the exact time that work was begun on Transmission Study 190, which as indicated above, was geared toward ultimate national interconnection and integrated operation of the electric bulk supply system of the entire United States. The WSCC opposed this plan and apparently has not worked towards it with much enthusiasm to date.

There is the suggestion that the Bureau plays a role in the WSCC analogous to that of a benevolent older brother, attempting to guide the

WSCC in certain directions without actually taking it formally in hand. In legal theory, under its statutory authorizations the Bureau cannot build plants for the sole purpose of generating electrical power, but it can build a dam for the primary purpose of containing water for agricultural or municipal use, and it can make the best possible use of that dam for the secondary purpose of hydroelectric generation, especially since monies earned from the sale of hydro power fund additional water containment (irrigation) projects. It can also, with specific Congressional approval, construct intertie lines to increase the reliability and economic efficiency of its power operations.

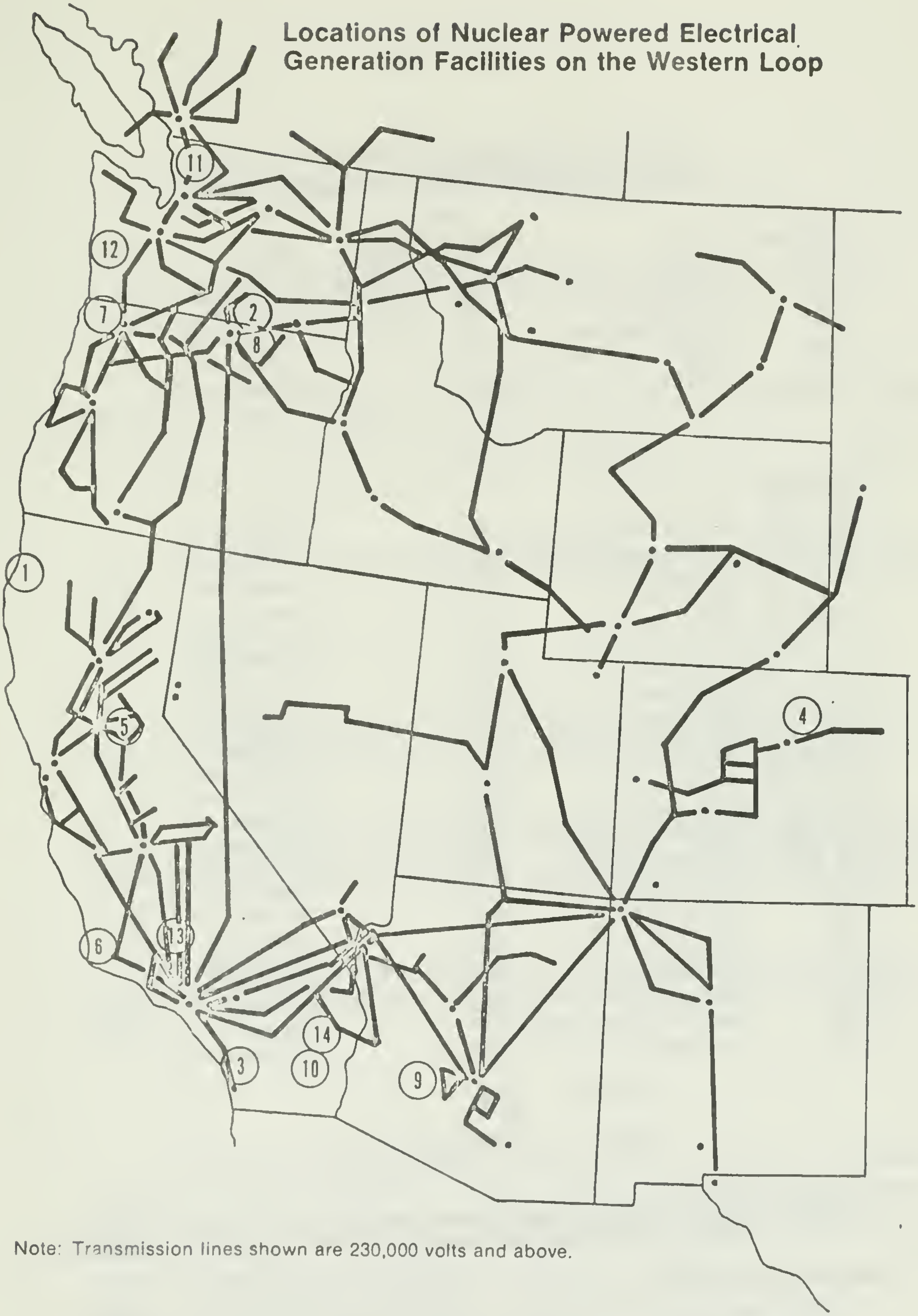
A similar rationale supports participation by the Bureau in construction (with Congressional approval) of a fossil-fueled generating unit at the Navajo Station in Arizona. It might be questionable, however, for a federal agency with the water development mission of the Bureau to run the interconnected electrical system in the Western United States. Hence, the logic of Bureau and Bonneville cooperation in WSCC and their desire to use persuasion and leadership to achieve broader goals.

Given the traditional controversy between public and private power, however, it is to be expected that the private sector members of WSCC would not allow the WSCC to function simply as a puppet of the Bureau. This was evident in WSCC opposition to Transmission Study 190, and is likewise evident in the assumption of leadership roles by several of the larger utilities in the WSCC and similar organizations. Yet, it is essential that all members of WSCC maintain cooperative relations, hence, conflicts are institutionalized, and differences, if indeed there are any, have to date not been particularly open or prolonged. At the same time, there is no indication that either group has fully adopted the other's objectives. For this reason, as state and federal controls of facility siting (and of energy policy generally) increase, the potential for conflict may also increase.

To the extent that the WSCC computer simulation is used by member utilities in planning additional generating capacity, planning in the WSCC today may incorporate regional realities which it would seem difficult to ignore. But such considerations are subject to cost/benefit analyses and other supplementary planning criteria of the individual utility or utilities doing the planning in each instance, and the final decision as to where to site an electric power facility can therefore be expected to reflect the decision maker's perception of his own self-interest, which may not necessarily coincide with the larger regional public interest.

The situation in the WSCC then, in terms of siting practices among the various utilities, is analogous to, and may in part reflect the situation evident in state regulation of site selection, insofar as decision making criteria reflect primary concern with who owns what within artificial geographical boundaries which do not coincide with the actual level of operations and planning made possible by, and to some extent now evident in, use of existing technology.

Locations of Nuclear Powered Electrical Generation Facilities on the Western Loop



Note: Transmission lines shown are 230,000 volts and above.

Existing and Scheduled Nuclear Power Plants in the WINB Member States (as of June 30, 1976)*

Existing	Name	Rating (net electric)	State	Site
1963	Humboldt	63 megawatts	California	1
1966	Hanford No.1	862	Washington	2
1967	San Onofre No. 1	430	California	3
1975	Rancho Seco No. 1	913	California	5
1976	Trojan	1130	Oregon	7
	Sub-total	3398		
Scheduled				
Aug. 1976	Ft. St. Vrain	330	Colorado	4
Aug. 1976	Diablo Canyon No.1	1060	California	6
Aug. 1977	Diablo Canyon No.2	1060	California	6
Nov. 1977	Hanford No. 1	(862)	Washington	2
July 1979	WPPSS No. 2	1100	Washington	2
March 1981	WPPSS No. 1	1250	Washington	2
Oct. 1981	San Onofre No. 2	1100	California	3
March 1982	WPPSS No. 3	1240	Washington	12
March 1982	WPPSS No. 4	1250	Washington	2
May 1982	Palo Verde No. 1	1270	Arizona	9
Jan. 1983	San Onofre No. 3	1100	California	3
July 1983	Skagit No. 1	1288	Washington	11
Sept. 1983	WPPSS No. 5	1240	Washington	12
May 1984	Palo Verde No. 2	1270	Arizona	9
Dec. 1984	San Joaquin No. 1	1300	California	13
May 1985	Sundesert No. 1	950	California	10
July 1985	Pebble Springs No.1	1260	Oregon	8
1986	Palo Verde No. 3	1270	Arizona	9
1986	San Joaquin No. 2	1300	California	13
1986	Skagit No. 2	1288	Washington	11
1987	San Joaquin No. 3	1300	California	13
1988	Vidal No. 1	1540	California	14
1988	Pebble Springs No.2	1260	Oregon	8
1988	San Joaquin No. 4	1300	California	13
	Sub-total	26464		
	Total	29862 megawatts		

Source: Adapted from Western Systems Coordinating Council April 1976 listing of existing and scheduled thermal generation facilities.

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* This material was previously published in Western States Energy Resource Development: Update 1976, Western Interstate Nuclear Board (Lakewood, Colorado: September, 1976), pp. 26-27.

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Chapter V. RECOMMENDATIONS AND PROBLEMS FOR FURTHER CONSIDERATION

The following recommendations are addressed specifically to the Western Interstate Nuclear Board as the primary sponsor of this study. They rest on the assumption that regional dimensions of energy facility siting in particular and energy development and management in general will increase in importance and political significance and that this fact provides a challenging opportunity for WINB to provide regional leadership in dealing with problems associated with such trends.

As this study has sought to show, regional factors in the energy situation are at present dealt with most casually at best--virtually ignored at worst. At the same time, the dominant thrust of energy technology is in the direction of more extensive regional interrelationships. Socially and economically the eleven state region is less fragmented than it was twenty-five or even ten years ago. The region, like the world generally, is shrinking as travel and communications improve and as business and personal relationships become geographically more interdependent. But the institutional arrangements for considering energy siting and development in regional terms remain primitive, particularly in the less-technical, but often crucial policy and administrative areas.

We recognize, of course, that there are no instant panaceas for developing greater awareness of regional factors affecting energy siting and development. Nor is it possible to suggest without qualification what institutional arrangements might most effectively contribute to perceptions of regional problems and formulation of regional action plans. In some circles hostility to regional approaches may even be encountered. To move in the desired direction, will, therefore, require discussions, exchanges of ideas, involvement of a broad spectrum of concerned individuals (officials and private citizens), and further study and investigation. In connection with the specific suggestions which follow, research programs may need to be established and further investigations of particular topics undertaken.

For good or ill, siting and energy development decisions are no longer simply matters which can be decided unilaterally by single state agencies or by the mangement of particular utilities. Energy development and siting involve an increasing number of private and public inputs and complex organizational and governmental interrelationships. The trend in decision making is from largely private to increasingly public; from largely local to area-wide, regional and even national. And the analysis of problems as well as development of solutions is multidisciplinary, concerned with complex interactions, alternatives and consequences. Environmental and regulatory legislation of the last several decades illustrates these trends only too well.

Already the federal government is involved at various points with aspects of the siting process. Some expect an even greater involvement. While more effective and comprehensive attention to regional dimensions of the energy situation may not forestall greater federal involvement (which is a desired objective for many), it may contribute to a more effective consideration of regional factors in energy planning and decision-making, and reduce the inefficiencies often associated with centralized and uniform national decisions.

The recommendations which follow are grouped in five categories: 1) those involving what might be designated a Clearinghouse function; 2) those involving an Information and Public Education function; 3) those involving leadership with respect to planning regional energy facility development; 4) those relating to improvement of the Administration of regional action and operations, and 5) those focusing on Conflict Resolution.

The Clearinghouse Function

Although the eleven state WINB region is characterized by a sophisticated system for electric energy interchange, with a high degree of information interchange, it would seem that communication among public agencies and officials and utility managers and operators could be significantly improved. To this end, WINB might serve as a Clearinghouse with respect to:

1. Siting policies and administrative practices in the several states, seeking a more effective exchange of information on regulating developments and a sharing of experience with respect to the several different approaches being taken to energy control.

2. Interrelationships of energy facility siting to programs and activities of local, state and federal agencies.

3. Interrelationships among private and public sectors as related to energy development within the region.

4. General developments--political, administrative, socio-economic, environmental, etc. likely to affect the regional energy situation.

Information and Public Education Function

This report has documented the extent to which citizens and policy makers alike are poorly informed on the regional aspects of energy production and management. In this context, WINB might consider positive steps to increase the understanding of regional interdependence. Seminars, conferences and workshops might be organized aimed at the general public or at special audiences such as legislators, state officials, policy leaders etc. seeking to improve the understanding of regional dimensions of the energy situation. Similarly, various communications media might be used to increase the understudying of regional relationships and interdependence.

Planning Leadership

It is apparent that well-developed institutions for regional energy planning do not exist. While WSCC activities provide some leadership in this respect, participation in its activities is limited to member utilities and within them largely to technical staff. Regional energy planning could be more broadly based and WINB might assume leadership to this end bringing together responsible private and public persons to consider ways of improving the energy situation. Among the areas within which regional cooperation might be fruitful are:

1. Development of better (uniform) data for regional energy planning, including information on socio-economic and environmental trends.

2. Development of commonly understood methods for load (demand) and supply forecasting.

3. Development of collaborative approaches to regional relationships as related to planning.

4. Exploration of costs and consequence of delay not only to individual companies but to the entire region.

5. Opportunities for collaboration within a regional context to improve energy development and increase its economy and efficiency.

6. Interrelationships among systems with respect to energy production and management and with respect to government policies and actions.

7. Problems of raising capital and opportunities for inter-utility collaboration and joint sponsorship of generating and transmission facilities.

8. More effective ways for securing citizen and user inputs and protecting consumer interests.

Administrative Progress

A continuing problem of any regional activity is the need to improve administrative processes and performance. The strong pull to state parochial action can be overcome only by constant attention to regional needs, benefits and opportunities. WINB might wish to study and review the possibilities for improving and developing the regional administrative systems including a monitoring of regional activities otherwise organized, which might impinge upon regional energy interests. The challenge is for effective collaboration with such organizations as River Basin Committees or Compact Commissions, as well as with many other public and private activities impacting energy.

Conflict Resolution

Throughout this study reference has been made to actual or potential areas of conflict. No institutions are now in existence to resolve intra-regional conflicts and WINB might wish to explore a possible role in this regard. Possible conflict areas include:

1. Energy allocations among subregions and states, intensified by allocation problems associated with water.
2. States with energy resources (coal, oil, uranium, etc) versus states with high energy demands.
3. Disagreements with respect to facility location, e.g., generating plants at mine mouth, at water sources, near consuming areas.
4. Allocation of costs and benefits of energy including externalities.
5. Taxation policy.

Appendix A. METHODOLOGY FOR THIS STUDY

Information set forth in this study was developed in several ways. We compiled a bibliography of articles from technical publications which dealt with the generation and transmission of electrical energy, articles from law journals treating the legal aspects of siting and other regulatory activity, articles from environmental publications, U.S. government and state government publications relating to energy in general and siting in particular, and some publications and studies from various regional organizations. It should be noted that an annotated bibliography will subsequently be prepared and provided WINB.

We interviewed three categories of persons in each of the eleven WINB states. These were persons involved in the environmental movement, U.S. government and state government officials, and noninvestor- and investor-owned utility personnel. The names of such persons were obtained by consulting the "yellow pages" under government of the relevant state's telephone books, by directly contacting environmental groups, and from a list of utility persons provided to us by Mr. John McKinley of WSCC. A list, compiled by state, of those with whom we conducted interviews follows this page.

In order to supplement the information obtained from the individual states we investigated several power plant projects which developed under different siting situations. As the study progressed, it became clear that it would be necessary to launch into study of the role played by the WSCC in particular, and other reliability councils in general.

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